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Replication Study:

CEO compensation and incentives: Evidence from M&A bonuses

Abstract

This paper researches the effect of mergers and acquisitions on the bonus and the salary of CEO's of big cap companies in the US. I find a positive effect of M&A on the cash bonus as well as the cash bonus + salary between 1993 and 1999 in the US. However, between 2000 and 2007 this effect seems to have disappeared in the US. In addition, I test a proxy for the M&A part of the CEO bonus, but this proxy is rejected. And lastly I checked whether there was an effect of M&A on the next year's salary. However it turned out there was no significant effect.

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1. Introduction

The last decennia, the amount of M&A worldwide has been steadily rising (IMAA, 2018). Is this merely because of the profitability of the mergers and acquisitions or could there be an incentive for the CEO's to encourage and push these mergers and acquisitions?
According to Grinstein and Hribar (2004), 39% of the acquiring firms reward their CEO's for the completion of a merger or acquisition deal in the United States, based on proxy statements. Bliss and Rosen (2001), who researched bank mergers, found evidence for a rise in compensation for CEO's in the case of a bank merger, however, this was mainly because of the growth of the size of a company. On the other hand Hagendorff and Vallascas (2011) find a relation between risk increasing deals and CEO compensation in the case of bank mergers in the United States. Bank mergers do not decrease the default risk while increasing the CEO compensation. Partly by the involvement of the shareholders who offer to CEO's risk-taking incentives to shift gains of other bank creditors. Bugeja et al (2012) researched the CEO pay following mergers and acquisition events in Australia finding a positive relation between the CEO compensation and successful completed M&A.

Jensen and Ruback (1983) find that the abnormal stock returns for the acquiring firms are not significantly different. However, Moeller, Schlingemann and Stultz (2003) report the opposite, for the acquiring firms the abnormal returns are significantly negative. Especially after 1997 they demonstrated the returns are poor. The years after the acquisition provide also negative returns of 10% over a 5-year period according to Agrawal, Jaffe and Mandelker (1992). And Haleblian et al. (2009) say there is evidence that the acquisition of another firm typically fail to produce positive value for the acquiring firm. In light of this Seo et al. (2015) give an explanation, saying that underpaid CEO's (in comparison to similar CEO's) try to raise their compensation by acquiring other firms.

Taken the above into account Grinstein and Hribar studied whether the compensations for CEO's in years when the companies engaged in a merger or acquisition where significantly different and what caused it. In this paper I will replicate the study of Grinstein and Hribar by studying their time period of 1993-1999, while adding a control period 2000-2007.

For this reason, the central question in this paper will be:

- *How do M&A influence the compensation for CEO's in the US?*

I find a significant effect of mergers and acquisitions on the cash bonus and the salary + cash bonus of CEO's in the 1993-1999 time period. However, I did not find such an effect for the 2000-2007 time period. Moreover, after testing for managerial power I concluded that my proxy for the M&A part of the bonus is rejected. Moreover, I do not find a significant effect of M&A influencing the next year salary of CEO's.

I will structure this paper as follows: I start at section 2 with the hypotheses. After which in section 3 the data and the corresponding methodology will be examined. Followed by the results in section 4 and finally my conclusion and last remarks in section 5.

2. Hypotheses

The purpose of this paper is to research whether mergers and acquisitions significantly affect the compensation of the CEO's. The CEO compensation at large corporations is set by the board of directors, with heavy involvement of the shareholders and should partially protect the shareholders' interests. Therefore it is highly likely that CEO compensation should rise if shareholder value would increase. Yet mergers and acquisitions give, on average, negative abnormal returns for large acquiring firms at first and over the next 5 year, thus not increasing shareholder value. But it will increase the firm size. Thus the first priority is to find if there is a significant relation between CEO compensation and mergers and acquisitions. Which results in the first hypothesis:

- *1: M&A increase the compensation for CEO's in the US.*

Boyd (1994) argues that CEO's have a certain level of board control. Boyd found positive correlations between the CEO compensation and whether the CEO is chairman of the board as well as between CEO compensation and return on equity and between CEO compensation and the firm size. On the other hand, Boyd found a negative correlation between the CEO compensation and the insider ratio (the ratio of employees or ex-employees on the board). Shivdasani and Yermack (1999) found that CEO's have a substantial grip on the corporate

governance by influencing director appointments, meaning they can be on the nominating board or have a substantial influence. Bebchuk and Fried (2003) found that managerial power heavily affects the CEO compensation. Therefore to include these factors, next to the mergers and acquisitions, I come to the following hypothesis:

- *2: Managerial power, skill and effort of the CEO, in the merger or acquisition, influences the bonuses for the CEO in the US.*

I should mention Bugeja et al. (2012) did not find any relation between the managerial power, with the exception of board size, and the cross sectional difference of CEO compensation in Australia. However they mention the difference in corporate structure between firms in the US and firms in Australia. Coakley and Iliopoulou (2006) find the same results as managerial power influence the CEO compensation for firms in the US but not for firms in the UK.
Also a different view of contracting comes from Coase (1937), Alchian and Demsetz (1972) and Williamson (1975), who favor a view of an efficient contracting theory. However for this paper I will follow the rent-seeking approach as mentioned before.

Chen and Han (2008) found that a merger or acquisition significantly increases the salary of the top manager team for Chinese corporations while the firm itself did not improve. Also the size of the deal is positively correlated with the raise of the salary of the top manager team. To see if this also holds up for the US, the third and last hypothesis is:

- 3*: M&A increase the salary for CEO's in the US.*

And as well as for the bonus the managerial power will be tested for the salary with the following hypothesis:

- *4: Managerial power, skill and effort of the CEO, in the merger or acquisition, influences the salary for the CEO in the US.*

3. Data and Methodology

3.1. Data

The mergers and acquisitions data necessary for this research is extracted from the SDC database, through ThomsonOne. To include solely relevant M&A I used the following restrictors:

- Only M&A with a deal size of at least 1 billion dollar.
- The acquiring company is from the United States.
- The effective date of the merger or acquisition is between 1993 and 1999 next to 2000 and 2007 as the two time periods.
- The acquiring firm is publicly listed, due to accessible information and for stock returns.
- The merger or acquisition has been completed.

Which resulted in a total of 282 mergers and acquisitions for the 1993-1999 time-period and 477 for the 2000-2007 time period. The financial data is obtained through the Compustat database, the bonus and salary data through Execucomp and the board data through ISS (Institutional Shareholder Services).

Table 1 presents the summary of variables for the first model for the time period 1993-1999. As can be seen the firms in the sample are very large, averaging a 24.5 billion dollars in totals assets, but with a high variance of 55.7 billion dollars. The average return on assets is high as well, 14.3%, with the top quartile of the sample being higher then 19.3%.

Table 1: The descriptive statistics of model 1 and model 3 for the 1993-1999 time period for a total of 1370 observations, with 282 M&A. Where *Bonus* is the cash bonus of the CEO in thousands, *SalaryBonus* is the sum of the salary and the bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1 and *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition).

Variable	Mean	Std. Dev.	25%	Median	75%
Bonus	1135.74	1602.44	333.45	673.85	1264
SalaryBonus	1915.12	1756.65	939.25	1410.76	2200
SalaryRaise	38.54715	161.4098	0	46.762	91.25
Size	24509.47	55719.91	3308.9	8407.9	23537
ROA	14.3%	8.8%	8.0%	13.5%	19.3%
ROAGrowth	1.31	10.53	0.89	1.01	1.12
Return	1.04	19.63	-7.44	1.86	11.13
SalesGrowth	1.20	0.40	1.03	1.10	1.26

Margin	22.3%	13.6%	13.6%	20.0%	31.1%
MarginGrowth	1.36	11.01	0.95	1.02	1.09
AcquisitionDummy	20.6%	-	-	-	-
Observations	1370	-	-	-	-

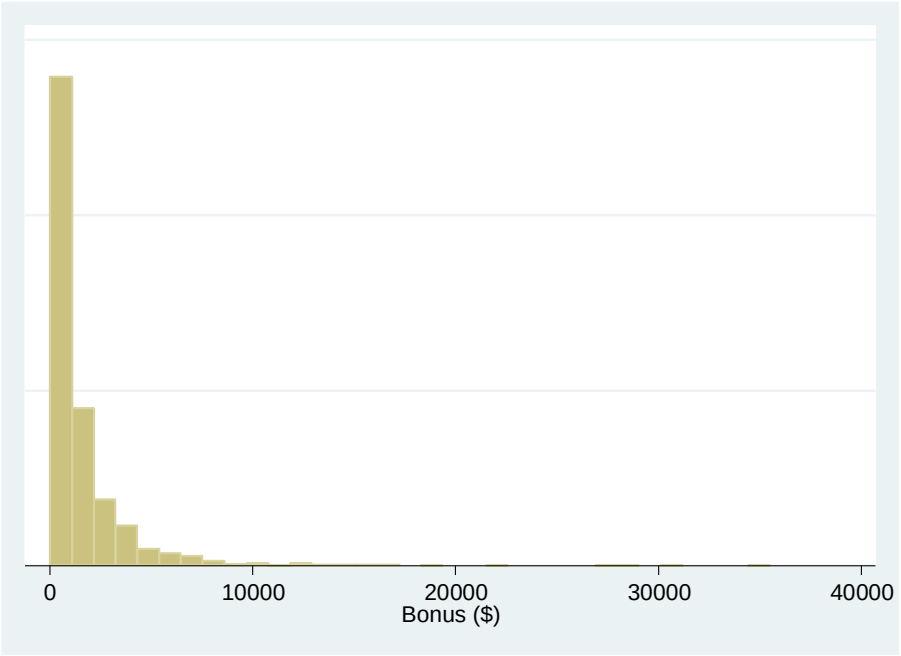
Table 2 presents the summary of variables for the first model for the time period 2000-2007. Like the first time period the firms in this sample are very large, averaging a 51.3 billion dollars in totals assets, with a high variance of 155.6 billion dollars. However what mostly strikes the eye is the 25% median for Bonus. Strangely enough this is 0 what would mean that 25% of the data has no bonus, but there is no reason to assume there is an error in the data, which has been extracted from Compustat. Because there is the possibility that there was indeed no bonus for the CEO's these years. That is why I left it in the sample. For comparison the 1993-1999 time period has for the first model 139 zero values for the bonus. Which means that 10.1% of the observations has no cash bonus.

Table 2: The descriptive statistics of model 1 and model 3 for the 2000-2007 time period for a total of 2411 observations, with 477 M&A. Where *Bonus* is the cash bonus of the CEO in thousands, *SalaryBonus* is the sum of the salary and the bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1 and *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition).

Variable	Mean	Std. Dev.	25%	Median	75%
Bonus	1500.76	2602.33	0	750	1800
SalaryBonus	2413.68	2730.96	976	1610.98	2809.88
SalaryRaise	36.38	196.57	0	31.90	85.23
Size	51315.28	155600.5	3596.74	10316.6	30435
ROA	11.7%	9.3%	5.4%	11.1%	17.0%
ROAGrowth	-2.67	179.97	0.80	0.99	1.13
Return	0.10	22.56	-5.12	1.79	8.87
SalesGrowth	1.18	0.63	1.02	1.10	1.23
Margin	21.6%	20.5%	11.4%	19.9%	31.9%
MarginGrowth	-2.83	184.06	0.88	0.99	1.08
Acq	19.8%	39.8%	-	-	-

Observations	2411	-	-	-	-

Because I leave the zero observations in this sample the observations of the dependent variable may not be normal distributed. In Graph 1 the distribution of the variable Bonus is displayed. As can be seen the distribution is not normal. This would mean an ordinary least squares regression is not sufficient for this data.



Graph 1: Histogram Bonus 2000-2007

Table 3 presents the summary of variables for the second model for the time period 1993-1999. The AdjBonus is calculated by subtracting the CEO bonus with the CEO bonus of year t-1 and divide that by the total CEO compensation (salary + bonus). The average adjusted bonus is below zero, with a standard deviation of 0.62, meaning that the bonuses in years with a merger or acquisition are not significant higher in this sample. This does not mean that M&A do not increase bonus, because there are other factors that influence it. Furthermore, for the CEOChair, CEONominating, InsiderRatio and Numboard variables the amount of observations is smaller in comparison to the rest. This is due to the fact that the ISS legacy data only go back to 1996. Which means that the data between 1993 and 1995 are not available and are set to a default of zero.

Table 3: The descriptive statistics of model 2 and model 4 for the 1993-1999 time period for a total of 282 M&A. Where Adj*Bonus* is the adjusted CEO Bonus, that is calculated by subtracting the bonus of year t-1 and scaled by total compensation, *Size* is the size of the firm measured in book assets at the beginning of the year, *DealSize* is the size of the deal, $AdjReturns3day_i$ Is the 3 day market adjusted return surrounding the deal, $TimeToComplete_i$ is the number of days

between announcement and date of completion, *Diversify* is a dummyvariable for diversification, ROA_i is earnings before interest, depreciation and amortization divided by book assets, *Return* is the return of stock during the the fiscal year, *CEOChair* is the CEO is a dummy variable for if the CEO is also the chairman of the board, *CEONominating* is a dummy variable for if the CEO is on the nominating board, *InsiderRatio* is the amount of insiders, employees or former employees of the company, on the board, *NumBoard* is the number of members on the board of directors and *Heckman* is a variable for the heckman correction.

Variable	Obs	Mean	Std. Dev.	25%	Median	75%
AdjBonus	279	-0.00450	0.62114	-0.02792	0 .06917	0.20387
Size	282	28505.31	45587.03	5833	14399.75	30299
Dealsize	282	2099.39	2485.27	302	1406.21	2647.45
ADJ3DayRet~n	282	-0.00371	0.04832	-0.01269	0	0.01038
TimetoComp	282	117	182.25	1	84	137
Diversify	282	28.0%	45.0%	-	-	-
ROA	282	13.3%	8.5%	6.9%	12.3%	18.6%
Return	282	0.54	20.71	-11	1.88	13.13
CEOChair	201	79.6%	40.4%	-	-	-
CEONominat~g	201	15.4%	36.2%	-	-	-
InsiderRatio	201	34.5%	17.4%	21.2%	33.3%	45.5%
NumBoard	201	12	3	10	12	14

Table 4 shows the details of the variables for the second model for the time period 2000-2007, ISS data was not available for all companies and/or years, meaning the CEOChair, CEONominating, InsiderRatio and Numboard variables are not complete. The dataset is missing the data for 47 observations. The time to complete is also much higher than the other time period, 173 days vs 117 days, meaning that the time for completion in 2000-2007 was on average higher than in 1993-1999 for my datasets.

Table 4: The descriptive statistics of model 2 and model 4 for the 2000-2007 time period for a total of 450 M&A. Where Adj*Bonus* is the adjusted CEO Bonus, that is calculated by subtracting the bonus of year t-1 and scaled by total compensation, *Size* is the size of the firm measured in book assets at the beginning of the year, *DealSize* is the size of the deal, $AdjReturns3day_i$ Is the 3 day market adjusted return surrounding the deal, $TimeToComplete_i$ is the number of days between announcement and date of completion, *Diversify* is a dummyvariable for diversification, ROA_i is earnings before interest, depreciation and amortization divided by book assets, *Return* is the return of stock during the the fiscal year, *CEOChair* is the CEO is a dummy variable for if the CEO is also the chairman of the board, *CEONominating* is a dummy variable for if the CEO is on the nominating board, *InsiderRatio* is the amount of insiders, employees or former employees of the company, on the board, *NumBoard* is the number of members on the board of directors and *Heckman* is a variable for the heckman correction.

Variable	Obs	Mean	Std. Dev.	25%	Median	75%
AdjBonus	450	-0.36094	1.44465	-0.18439	0	0.16483
Size	450	100568.4	250449.3	7838	19710.42	57211
Dealsize	450	4775.70	8731.50	1430.53	2205.54	4640
ADJ3DayRet~n	450	-0.00049	0.03092	-0.01279	0	0.01222
TimetoComp	450	173	200	68	114	185
Diversify	450	30.7%	46.2%	-	-	-
ROA	450	11.3%	8.4%	4.7%	10.6%	16.8%
Return	450	-3.56	32.85	-9.06	1.31	9.19
CEOChair	403	71.7%	42.1%	-	-	-
CEONominat~g	403	4.0%	19.6%	-	-	-
InsiderRatio	403	28.6%	15.2%	16.7%	26.7%	37.5%
NumBoard	403	12	3	9	11	13

3.2. Methodology

The following formula has been used by me to determine whether a merger or acquisition influences the bonus of a CEO:

$$Bonus_{it} = A_{con} + B_1 Size_{it} + B_2 ROA_{it} + B_3 ROAGrowth_{it} + B_4 Return_{it} + B_5 SalesGrowth_{it} + B_6 Margin_{it} + B_7 MarginGrowth_{it} + B_8 AcquisitionDummy_{it} + \varepsilon_{it}$$

Where $Bonus_{it}$ is the bonus of the CEO, $Size_{it}$ is the size of the firm measured in book assets, ROA_{it} is earnings before interest, depreciation and amortization divided by book assets,, $ROAGrowth_{it}$ is the ROA of year t divided by the ROA of year t-1 , $SalesGrowth_{it}$ is the Sales of year t divided by the Sales of year t-1, $Return_{it}$ is the raw stock return of the firm, $Margin_{it}$ is the ROA divided by sales, $MarginGrowth_{it}$ is the margin of year t divided by the margin of year t-1 and $AcquisitionDummy_{it}$ is a dummyvariable for the acquisition of another firm(1= acquisition, 0=no acquisition) and ε_{it} is the error term, for firm i at the end of year t. This formula is based on the research of Grinstein and Hribar (2004). This model will be used to test the first hypothesis.

For the both periods I will research the explanation of the bonus based on the managerial power with the following cross-sectional model:

$$AdjBonus_i = A_{con} + B_1Size_i + B_2DealSize_i + B_3AdjReturns3day_i + B_4TimeToComplete_i + B_5Diversify_i + B_6ROA_i + B_7Return_i + B_8CEOChair_i + B_9CEONominating_i + B_{10}InsiderRatio_i + B_{11}NumBoard_i + B_{12}Heckman_i + YearDummies + IndustryDummies + \varepsilon_{it}$$

Where Adj$Bonus_i$ is the adjusted CEO Bonus, that is calculated by subtracting the bonus of year t-1 and scaled by total compensation, $Size_i$ is the size of the firm measured in book assets at the beginning of the year, $DealSize_i$ is the size of the deal, $AdjReturns3day_i$ is the 3 day market adjusted return surrounding the deal, $TimeToComplete_i$ is the number of days between announcement and date of completion, $Diversify_i$ is a dummyvariable for diversification, ROA_i is earnings before interest, depreciation and amortization divided by the book assets, $Return_i$ is the raw return of stock during the fiscal year, $CEOChair_i$ is a dummy variable to indicate whether the CEO is also the chairman of the board, $CEONominating_i$ is a dummy variable to indicate whether the CEO is on the nominating board, $InsiderRatio_i$ is the amount of insiders, employees or former employees of the company, on the board, $NumBoard_i$ is the number of members on the board of directors, $Heckman_i$ is a variable for the heckman correction(which is attained through a on the firms and the likelihood that they will undertake a large acquisition), *YearDummies* and *IndustryDummies* are dummy variables for the years and industry and ε_t is the error term. This formula is again based on the research of Grinstein and Hribar (2004). This model will be used to test the second hypothesis.

In order to check whether the change of salary is influenced by a merger or acquisition by testing the third hypothesis I will use the next model:

$$SalaryRaise_{it+1} = A_{con} + B_1Size_{it} + B_2ROA_{it} + B_3ROAGrowth_{it} + B_4Return_{it} + B_5SalesGrowth_{it} + B_6Margin_{it} + B_7MarginGrowth_{it} + B_8AcquisitionDummy_{it} + \varepsilon_{it}$$

Where $SalaryRaise_{it+1}$ is the change in salary at year t +1 by substracting the salary at year t +1 with the salary at year t

For the fourth hypothesis I use the next model:

$$SalaryGrowth_{i,\,t+1} = A_{con} + B_1Size_i + B_2DealSize_i + B_3AdjReturns3day_i + B_4TimeToComplete_i + B_5Diversify_i + B_6ROA_i + B_7Return_i + B_8CEOChair_i + B_9CEONominating_i + B_{10}InsiderRatio_i + B_{11}NumBoard_i + B_{12}Heckman_i + YearDummies + IndustryDummies + \varepsilon_{it}$$

Where $SalaryGrowth_{i+1}$ is the growth of the salary of the following year (salary of t+1 minus salary at t divided salary at t) and the rest of the variables the same as the cross sectional model.

Grinstein and Hribar mention the $AdjReturns2day_i$ as the 2 day market adjusted return surrounding the deal. However in their research they define the 2 day adjusted return as, firstly the abnormal returns at the day before the announcement plus the abnormal returns at the day of the announcement. Secondly mention it as the abnormal returns of the day before the announcement till the day after the announcement. The latter would, in my opinion, capture the abnormal returns better, especially in case of positive returns.

The heckman variable is a correction for the probability a firm would make an acquisition. If the variables that determine if a firm is likely to acquire another firm would be correlated with the bonus or the salary of the CEO there would be an omitted variable bias.
Hence a correction in the form of the Heckman correction is in place. To compute this variable I run the following probit regression with a dummy-variable MA (which is 1 if there was a merger or acquisition and 0 otherwise) as dependent variable:

$$F(Z_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Z_i} e^{\frac{Z_i^2}{2}} dZ_i$$

In which:

$$Z_i = A_{con} + B_1MarketToBook_i + B_2CashToAssets_i + B_3DebtToAssets_i + B_4New\_econ_i + B_5ROA_i + B_6ROA_i + B_7L2Y\_MA_i + B_8RevenueTotal_i + \varepsilon_i$$

Where $MarketToBook_i$ is the market-to-book ratio, $CashToAssets_i$ is the cash-to-assets ratio, $DebtToAssets_i$ is the Debt-to-assets ratio, New_econ_i is a dummy variable which is 1 if the company is a new economy company and 0 otherwise, ROA_{it} is earnings before interest, depreciation and amortization divided by book assets, $L2Y\_MA_i$ is a dummy variable for whether the company had a M&A in the past 2 years and $RevenueTotal_i$ is the total revenue.
The results of the probit regression can be found in the appendix in table 11.

For the three-day adjusted returns I first calculated the alpha and beta of the market for each merger or acquisition in a control period, a period where the returns were not influenced by the news or idea of a merger or acquisition. The period for this model is 170 days for the announcement till 100 days before the announcement. The model for the alpha and beta is:

$$R_{it} = A_i + B_t RM_t + \varepsilon_{it}$$

Where R_{it} is the return of company i and RM_t is the return of the market, in this case represented by the S&P500 returns at time t. The alpha and beta acquired from this regression, $\hat{A}_i$ and $\widehat{B}_i$, are used for the different companies to make a prediction for the returns during the day before, the day of and the day after the announcement of the merger or acquisition.

$$R_{it}{}^{*} = \hat{A}_i + \hat{B}_i RM_{it} + \varepsilon_{it}$$

In which $R_{it}{}^{*}$ is the predicted return if the merger or acquisition did not happen.
The abnormal returns, the difference between the returns and predicted returns, for each day are then calculated with the following formula:

$$ar_{it} = R_{it} - R_{it}{}^{*}$$

After which the cumulative abnormal returns of the three days and also the adjusted three day return variable are:

$$car_t = \sum_{i=1}^{N} ar_{it}$$

4. Results

The results in table 5 show that a merger or acquisition has a positive and significant effect on the bonus of a CEO. This suggests that a merger or acquisition raises the bonus for a CEO, which is in line with my first hypothesis. I also find a significant effect of size and ROA on the bonus and a 5% significance of raw return variable.

In order to make sure there is no substitution effect for the cash bonus and salary of a CEO I measure the effect for M&A on the bonus and salary. If this is again significant with the same sign this would mean there is no substitution effect. As can be seen in the second part of table 5, this is the case.

Table 5: Regression results of performance and M&A on the Bonus of a CEO for the 1993-1999 time period for a total of 1370 observations, with 282 M&A. Where *Bonus* is the cash bonus of the CEO in thousands, *SalaryBonus* is the sum of the salary and the bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1, *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition) and _cons is the constant of the regression.

Bonus	Coef.	t	**Bonus+ Salary**	Coef.	t
Acquisition	314.88***	3.25		419.86***	4.06
	(96.87)			(103.44)	
Size	0.01380***	19.17		0.01667***	21.69
	(0.00072)			(0.00077)	
ROA	1571.06***	3.39		2201.39***	4.45
	(462.85)			(494.21)	
ROAGrowth	-3.59	-0.13		7.03	0.23
	(28.35)			(30.28)	
Return	4.14**	2.12		3.13	1.50
	(1.95)			(2.08)	
SalesGrowth	-6.93	-0.07		-154.60	-1.49
	(97.39)			(103.99)	
Margin	411.99	1.42		-37.94	-0.12
	(290.60)			(310.29)	
MarginGrowth	-0.91	-0.03		-9.44	-0.33

	(27.13)		(28.97)	
_cons	426.30***	3.01	1300.42***	8.59
	(141.77)		(151.38)	
Observations	1370		1370	
R-squared	0.2349		0.2741	

*** significant at 1%, ** significant at 5%, * significant at 10%

For the second time period I first run an ordinary least squares regression. As mentioned before there is a big amount of zero bonuses. So I run a Tobit regression with censoring from below (=0). The results of this regression are displayed in table 6 and show that a merger or acquisition has no positive and significant effect on the bonus of a CEO. This suggests that a merger or acquisition do not raise the bonus for a CEO. This is in contrast to my first hypothesis. This could mean that the found effect by Grinstein and Hribar and my research of the effect of mergers and acquisitions during the last years of the 20th century has shifted. However as mentioned before the amount of 0 bonuses could give a distorted picture. In the second regression, I did use an ordinary least squares regression, with the salary + bonus as the dependent variable, the acquisition dummy is significant, however without a significant effect in the first model this means nothing. Also, I do find a significant effect of Size, ROA, Return, Salesgrowth and Margin with the dependent variable Bonus and a significant effect of Size, ROA, Return, Salesgrowth, Margin and the acquisition dummy with the dependent variable being the bonus plus the salary. Meaning that a lot of variables were significant but the acquisition dummy was not, so the model has explanatory power of the bonus of a CEO. Thus meaning that a merger or acquisition did not raise the bonuses of CEO's in 2000-2007. These results are quite different when compared with the results of the 1993-1999 time period. This could mean a shift in compensation governance between the two time periods.

Table 6: Regression results of performance and M&A on the cash bonus of a CEO for the 2000-2007 time period for a total of 2411 observations, with 477 M&A. Where *Bonus* is the cash bonus of the CEO in thousands, *SalaryBonus* is the sum of the salary and the cash bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1, *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition) and _cons is the constant of the regression.

Bonus	**Coef. Std.**	**t**	**Bonus+ Salary**	**Coef.**	**t**
Acquisition	104.17	0.65		250.00**	1.97
	(160.07)			(127.05)	
Size	0.00744***	17.87		0.00764***	22.48
	(0.00042)			(0.00034)	
ROA	2307.93***	2.97		2298***	3.76
	(776.13)			(611.92)	
ROAGrowth	55.46*	1.91		39.41*	1.74
	(29.05)			(22.64)	
Return	8.04***	2.81		6.27***	2.75
	(2.86)			(2.28)	
SalesGrowth	277.34***	2.49		93.42	1.13
	(111.59)			(82.35)	
Margin	1858.96***	4.91		1012.47***	3.57
	(378.51)			(283.79)	
MarginGrowth	-34.27	-0.82		-38.37*	-1.73
	(41.60)			(22.14)	
_cons	-517.26***	-2.87		1369.88***	10.31
	(180.19)			(132.85)	
Observations	2411			2411	
R-squared	0.0120			0.2131	

*** significant at 1%, ** significant at 5%, * significant at 10%

I run an OLS regression for the third model to test the third hypothesis. To check whether the variances are homoscedastic I do the White test. The results confirm my model is

heteroskedastic (Chi^2 =63.53905, p-value =0.0224). Therefore I run an OLS regression with robust variance.

Table 7 shows the effect of M&A on the change of salary of CEO's in the US. It shows that the return on assets growth the growth in sales and growth in margin all have a significant effect on the change in salary of the CEO. The acquisition dummy has no significant effect on the change in salary. Meaning that M&A do not influence the change in salary in this time period.

Table 7: Regression results of performance and M&A on the change of salary for CEO's for the 1993-1999 time period for a total of 1284 observations, with 279 M&A Where *SalaryRaise* is the change in salary at year t +1 of the CEO in thousands, *SalaryBonus* is the sum of the salary and the bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1, *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition) and _cons is the constant of the regression.

SalaryRaise	Coef.	t	P>t
Acquisition	12.11687	0.93	0.353
	(13.0317)		
Size	0.0001236	0.67	0.500
	(0.0001831)		
ROA	65.91756	1.34	0.182
	(49.32651)		
ROAGrowth	-6.538729***	-7.21	0.000
	(0.9070875)		
Return	0.4450708*	1.95	0.052
	(0.2286198)		
SalesGrowth	45.82368***	3.78	0.000
	(12.12325)		
Margin	-.936664	-0.03	0.974
	(28.3605)		
MarginGrowth	4.59724***	5.20	0.000
	(0.8835285)		

_cons	-29.83504	-1.47	0.141
Observations	1284		
R-squared	0.0348		

*** significant at 1%, ** significant at 5%, * significant at 10%

For the second time period I again run an OLS regression. The white test indicates once more heteroskedasticity (Chi^2 = 120.7281, p-value =0.000). Therefore I run an OLS regression with robust variance.

Table 8 shows the effect of M&A on the change of salary of CEO's in the US in the 2000-2007 time period. There is a significantly effect of size, growth in return of assets, the margin and the growth of the margin. Just like the 1993-1999 time period there is no significant effect of the acquisition dummy on the change in salary of CEO's, meaning that for both time periods the third hypothesis can be rejected. Which also means there is no reason the research the fourth hypothesis, because there is no raise in salary caused by mergers or acquisitions.

Table 8: Regression results of performance and M&A on the change of salary for CEO's for the 2000-2007 time period for a total of 2350 observations, with 463 M&A. Where *SalaryRaise* is the change in salary at year t +1 of the CEO in thousands, *SalaryBonus* is the sum of the salary and the bonus of the CEO in thousands, *Size* is the size of the firm measured in book assets in millions, *ROA* is earnings before interest, depreciation and amortization divided by book assets, *ROAGrowth* is the ROA of year t divided by the ROA of year t-1 , *SalesGrowth* is the Sales of year t divided by the Sales of year t-1, *Return* is the raw stock return of the firm in dollars, *Margin* is the ROA divided by sales, *MarginGrowth* is the margin of year t divided by the margin of year t-1, *AcquisitionDummy* is a dummy variable for the acquisition of another firm(1= acquisition, 0=no acquisition) and _cons is the constant of the regression.

SalaryRaise	Coef.	t	P>t
Acquisition	-2.81	-0.24	0.813
	(11.845)		
Size	-0.0000804***	-2.66	0.008
	(0.0000302)		
ROA	40.92	0.70	0.481
	(58.06)		
ROAGrowth	2.86***	3.29	0.001
	(0.87)		
Return	0.29	1.62	0.105
	(0.18)		

SalesGrowth	3.93	0.67	0.500
	(5.83)		
Margin	38.77**	2.04	0.042
	(19.03)		
MarginGrowth	-2.79***	-3.29	0.001
	(0.85)		
_cons	22.81**	2.35	0.019
	(9.72)		
Observations	2350		
R-squared	0.0084		

*** significant at 1%, ** significant at 5%, * significant at 10%

Cross sectional analysis

With the results of table 5, it can be stated that mergers or acquisition increase the total compensation for CEO's between 1993 and 1999. The question next is how? The second model, as mentioned before, is to research the explanatory power of the effect of the CEO's managerial power and expertise on the M&A related bonus. Hence there is a proxy needed: the Adjusted Bonus, which is the CEO bonus of year t minus the CEO bonus of year t-1 divided by the total compensation (salary + bonus) of year t. I will regress the same variables as used by Grinstein and Hribar on this proxy. I first ran an ordinary least squares regression. To check whether the variances are homoscedastic I do the White test. The results confirm my model is not heteroskedastic (Chi^2 =147.4655, p-value =0.5661), meaning there is no need for a different model.

Table 9 shows the results of the second model on the 1993-1999 time period. As can be seen only the deal size and raw return have a significant effect on the adjusted bonus. This could imply that this adjusted bonus is not a good proxy for the M&A related size of the bonus of the CEO. In comparison to the adjusted bonus of Grinstein and Hribar, who used the in the proxy statements mentioned bonuses, found much more significant effects.

I run the OLS with a deal size of 1430.53 and higher and 2205.54 and higher (top75% of the deal sizes and top 50% of deal sizes respectively, see table 3), to check whether this makes any difference. Unfortunately it did not, with the exception of making the variable whether the CEO is on the nominating board significant for the top 75% deal sizes while the deal size making the deal size not significant. For the top 50% deal sizes none of the variables were significant.

Table 9: The regression results of the managerial power of the 1993-1999 time period for a total of 279 M&A.
Where Adj*Bonus* is the adjusted CEO Bonus, that is calculated by subtracting the cash bonus of year t-1 and scaled by total compensation, *Size* is the size of the firm measured in book assets at the beginning of the year, *DealSize* is the size of the deal, $AdjReturns3day_i$ Is the 3 day market adjusted return surrounding the deal, $TimeToComplete_i$ is the number of days between announcement and date of completion, *Diversify* is a dummy variable for diversification, ROA_i is earnings before interest, depreciation and amortization divided by book assets, *Return* is the return of stock during the the fiscal year, *CEOChair* is the CEO is a dummy variable for if the CEO is also the chairman of the board, *CEONominating* is a dummy variable for if the CEO is on the nominating board, *InsiderRatio* is the amount of insiders, employees or former employees of the company, on the board, *NumBoard* is the number of members on the board of directors and *Heckman* is a variable for the heckman correction.

AdjBonus	Coef.	t	P>t
Size	1.32e-07	0.12	0.905
	(1.10e-06)		
Dealsize	0.00007***	3.64	0.000
	(0.00002)		
ADJ3DayReturn	0.20	0.24	0.808
	(0.83)		
TimetoComp	0.00004	0.16	0.877
	(0.00027)		
Diversify	0.07868	0.88	0.379
	(0.08917)		
ROA	0.96	1.42	0.156
	(0.67)		
Return	0.00589***	3.12	0.002
	(0.00189)		
Heckman	-0.17	-0.21	0.833
	(0.78)		
CEOChair	-0.13	-1.13	0.262
	(0.11)		
CEONominating	-0.11	-0.75	0.455
	(0.14)		
InsiderRatio	-0.28	-1.00	0.317
	(0.280)		
NumBoard	0.01183	0.93	0.352
	(0.01267)		
_cons	-0.43	-0.68	0.496

	(0.63)
Industry Dummies	Included
Year Dummies	Included
Observations	279
R-squared	0.4286

*** significant at 1%, ** significant at 5%, * significant at 10%

Table 10 shows the regression results of the second model for the 2000-2007 time period. First I performed an ordinary least squares regression. Again I performed a White test on this model and reject the null of homoscedasticity (chi^2 = 383.7636, p-value = 0.0). Therefore I performed a generalized least squares regression, GLS, for getting rid of the heteroscedasticity.
Just as the previous model there are not many variables significant, only time to complete has a very small significant negative effect. Implying once again that the used adjusted bonus proxy is not a good one. I run the GLS with a deal size of 302 and higher and 1406.21 and higher (top75% of the deal sizes and top 50% of deal sizes respectively, see table 4), to check whether this makes any difference. Unfortunately it did not, with the exception of making the Adjusted 3 day return significant for the top 50% deal sizes.

Table 10: The GLS regression results of the managerial power of the 2000-2007 time period for a total of 310 M&A. Where Adj*Bonus* is the adjusted CEO Bonus, that is calculated by subtracting the cash bonus of year t-1 and scaled by total compensation, *Size* is the size of the firm measured in book assets at the beginning of the year, *DealSize* is the size of the deal, $AdjReturns3day_i$ Is the 3 day market adjusted return surrounding the deal, $TimeToComplete_i$ is the log of number of days between announcement and date of completion, *Diversify* is a dummy variable for diversification, ROA_i is earnings before interest, depreciation and amortization divided by book assets, *Return* is the return of stock during the the fiscal year, *CEOChair* is the CEO is a dummy variable for if the CEO is also the chairman of the board, *CEONominating* is a dummy variable for if the CEO is on the nominating board, *InsiderRatio* is the amount of insiders, employees or former employees of the company, on the board, *NumBoard* is the number of members on the board of directors and *Heckman* is a variable for the heckman correction.

AdjBonus	Coef.	t	P>t
Size	-6.88e-07	-1.36	0.173
	(5.04e-07)		
Dealsize	-2.56e-06	-0.24	0.808
	(1.05e-05)		
ADJ3DayReturn	4.51	1.51	0.133
	(2.99)		
TimetoComp	0.00102**	2.17	0.031
	(0.00047)		

Diversify	0.1069382	0.56	0.575
	(0.19064)		
ROA	1.89	1.53	0.128
	(1.24)		
Return	-0.00119	-0.42	0.673
	(0.00282)		
Heckman	-0.21	-0.23	0.815
	(0.88)		
CEOChair	0.02	0.13	0.895
	(0.18)		
CEONominating	-0.51	-0.90	0.368
	(0.60)		
InsiderRatio	-0.32	-0.57	0.566
	(0.55)		
NumBoard	-0.0238068	-1.08	0.280
	(0.02201)		
_cons	0.07782	0.04	0.967
	(1.87437)		
Year Dummies	Included		
Industry Dummies	Included		
Observations	310		
R-squared	1.00		

*** significant at 1%, ** significant at 5%, * significant at 10%

5. Conclusion

Taking everything into consideration there is an indication that a merger or acquisition does raise the compensation for the CEO. During 1993-1999 there is an increase of 314880 dollar in the cash bonus part of a CEO when his company engaged in M&A and 419860 dollar increase in cash bonus plus salary. However during 2000-2007 I only found an increase in the salary and bonus of the CEO, of 250000 dollar, when the company was engaged in M&A, but not for

solely the cash bonus. Based on these results I can say there is plausible chance that the influence of mergers and acquisition has changed. Reasons could be that between 2000 and 2007 the bursting of the dot com bubble, 9 September 2001 and the credit crunch in the making influenced the sentiment. Meaning that in 2001 and 2007 especially the cash bonuses of the CEO's would have been lower or omitted, due to the start of the crisis. Also the run-up of the crisis could have played it parts in the years before. However more research is needed to make a definite conclusion. For example this research on the last 8-10 years in the US. Also other countries can be examined.

To analyze the effect of managerial power on the M&A based part of the CEO bonus I used a proxy of the cash bonus of the year minus the cash bonus of year before, which than is divided by the Salary and bonus of the year. For both the time periods this was not a good proxy. Even when I only used the top 75% and top 50% of the mergers on basis of deal size I only found a significant effect, of all the managerial power variables, for whether the CEO is on the nominating board for the 1993-1999 time period. Grinstein and Hribar used a different proxy for their research, based on the proxy statements, which gave them different results.

To test the third hypothesis: "*M&A increase the salary for CEO's in the US."* I ran severable variables including an acquisition dummy on the change in salary for the year t +1, where t is the year for all other variables. The result was that in both time periods there was no significant effect of the existence of a merger or acquisition in the previous year on the change in salary. This result contradicts the findings of Chen and Han (2008). A reason for this could be that Chen and Han performed their research on Chinese mergers and I did on American merger, which are different markets.

Remarks

An idea of how the improve the model I used, is to redefine some of the variables used. Like instead of raw returns, taking the raw returns divided by the returns of that year. Also ROAGrowth, Size and MarginGrowth could be composed by first extracting last year's value before dividing it with last year's value. And of course a different proxy for the M&A based part of the bonus is very important. Also the idea of a cash bonus could be a limitation, so using the total bonus of the CEO (the addition of the value of the options among other things) could be a better proxy for the bonus of the CEO in comparison with the cash bonus.

6. Appendix

Table 11: The probit regression for Heckman variable for both time periods. Where $MarketToBook_i$ is the market-to-book ratio, $CashToAssets_i$ is the cash-to-assets ratio, $DebtToAssets_i$ is the Debt-to-assets ratio, New_econ_i is a dummy variable which is 1 if the company is a new economy company and 0 otherwise, ROA_{it} is earnings before interest, depreciation and amortization divided by book assets, $L2Y\_MA_i$ is a dummy variable for whether the company had a M&A in the past 2 years and $RevenueTotal_i$ is the total revenue.

MA 1993-1999	**Coef.**	**T**	**MA 2000-2007**	**Coef.**	**T**
MarketTobook	0.0709234***	3.91		0.0605225***	5.27
	(0.0181282)			(0.0114768)	
CashtoAssets	-1.995119***	-2.87		-0.3861789	-1.19
	(0.695224)			(0.3250678)	
Debttoassets	0.3311838*	1.81		-0.172383	-1.22
	(0.1830356)			(0.1412226)	
New_econ	0.0413773	0.37		-0.117741	-1.48
	(0.1119351)			(0.0794594)	
ROA	-0.776600**	-2.37		0.4883034*	1.74
	(0.3271961)			(0.2812649)	
L2Y_MA	-0.0347652	-0.40		-0.1438644*	-1.80
	(0.0871565)			(0.0798134)	
RevenueTotal	4.15e-06***	2.38		7.11e-06***	7.86
	(1.74e-06)			(9.05e-07)	
_cons	-0.9320782***	-10.16		-1.048113***	-15.56
	(0.0917218)			(0.0673381)	

*** significant at 1%, ** significant at 5%, * significant at 10%

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