ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics
Bachelor Thesis Economics and Business Economics

The effect of bank mergers on CEO compensation

ABSTRACT

In this paper, I examine the relationship between M&A-activity and CEO compensation from 2000 - 2007 for a sample of 22 national banks in the United States of America. Using OLS-regressions, I find that that asset growth through mergers has a positive effect on total compensation, but not on cash compensation. However, this effect disappears when considering firm and year fixed effects. Furthermore, I find that abnormal stock returns have a positive effect on total compensation, even when considering firm and year fixed effects. This effect, however, does not exist for cash compensation.

Name Student: Christian Spek
Student ID number: 544038
Supervisor: Prof. Dr. Ingolf Dittmann
Second Assessor: Dr. Ruben de Bliek
Date final version: 30 July 2022

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

Table of contents

1. INTRODUCTION **2**

2. THEORETICAL FRAMEWORK AND HYPOTHESES **4**

2.1 EXECUTIVE COMPENSATION AND THE PRINCIPAL-AGENT THEORY 4
2.2 DETERMINANTS OF EXECUTIVE COMPENSATION 4
2.2.1 Executive compensation and stock returns *4*
2.2.2 Executive compensation and firm size *5*
2.3 CEO COMPENSATION AND BANK MERGERS 5
2.4 HYPOTHESES 6

3. DATA **7**

3.1 M&A DATA 7
3.2 COMPENSATION DATA 8
3.3 FUNDAMENTAL DATA 9
3.4 STOCK DATA 9
3.5 RESEARCH VARIABLES 10
3.5.1 Dependent Variables *10*
3.5.2 Independent variables *10*

4. METHODOLOGY **13**

4.1 REGRESSION ANALYSIS 13
4.1.1 Multivariate OLS-regression *13*
4.1.2 Fixed effects *14*
4.2 F-TESTS 14

5. RESULTS **16**

5.1 MULTIVARIATE REGRESSION RESULTS 16
5.2 FIXED EFFECTS RESULTS 18

6. CONCLUSION AND DISCUSSION **20**

6.1 CONCLUSION 20
6.2 DISCUSSION 21
6.2.1 Internal validity *21*
6.2.2 External validity *22*
6.2.3 Limitations *22*

7. REFERENCES **23**

1. Introduction

The merger between the holding company of Dutch supermarket giant Albert Heijn, the Dutch Royal Ahold N.V., and Belgian supermarket chain Delhaize was enormous news in the year 2016. This was not only due to the fact that the combined company would form the fourth largest supermarket chain in Europe, but also because of the large compensation bonusses for the top executives of both companies. CEO of Ahold N.V., Dick Boer, received a full year salary in stocks, while his Belgian counterpart Frans Muller received a bonus of €1.5 million (Business Insider Nederland, 2016). These bonusses show that big mergers are often rewarded, and could incentivize CEOs to complete mergers themselves.

This thesis focusses on the effect of mergers and acquisitions on CEO compensation in the United States banking industry. The research is based on the research of Bliss & Rosen (2001), who find that bank mergers are beneficial to the compensation of the CEO of the acquiring bank, in the years 1986-1995. My research is centered around the following research question:

What is the effect of M&A activity on CEO compensation in the banking industry in the years 2000-2007?

My research attempts to recreate these results of Bliss & Rosen (2001). Both asset growth through mergers, as well as abnormal stock returns, will be analyzed in order to determine their effect on CEO compensation. This research is relevant in the way that it will determine whether the results found by Bliss & Rosen (2001) are still valid almost two decades after. Also, this research will add to the research of Bliss & Rosen (2001) by considering firm fixed effects. Furthermore, this research could have real-life implications on the determination of CEO compensation, and could provide an example of a solution to the principal-agent problem posed by Jensen & Meckling (1976).

Using OLS-regressions, I find that that asset growth through mergers has a positive effect on total compensation, but not on cash compensation. However, this effect disappears when considering firm fixed effects. Furthermore, I find that abnormal stock returns have a positive effect on total compensation, even when considering firm fixed effects. This effect, however, does not exist for cash compensation.

To answer the research questions, I first lay out a theoretical framework as well as define the hypotheses I use. Next, I explain the collection of the data, as well as the dependent and independent variables used. After this, I explain the methodology of this research by stating the equations and techniques I used. Having discussed this, I present the results of my analyses, draw conclusions from them and discuss the validity as well as the implications of these results.

2. Theoretical framework and hypotheses

In this chapter, I first lay out a theoretical framework on executive compensation. Based on this framework, I then formulate the hypotheses that I will test in this thesis.

2.1 Executive compensation and the principal-agent theory

In many large companies, there is a separation of ownership and management: a company is owned by the stockholders, while it is operated by the CEO, the CFO, and other executives. This relationship between ownership and management can be described as an *agency relationship*. In their research, Jensen & Meckling (1976) define this relationship as an agreement between a *principal* and one or more *agents*. The principal hires the agents and lets them operate and perform services under its behalf. In many firms, this principal is the stockholder, while the agents are the executive offers who operate the firm.

Jensen & Meckling (1976) also describe a possible problem of this agency relationship: when both the principal and the agent are utility optimizers, it could well be possible that the interests of the principal differ from the interests of the agents. In the case of a company, the stockholders want to maximize their own utility through a maximization of the value of the company. Managers, however, could have other interests, which do not necessarily meet the interests of the stockholders. Because stockholders cannot always observe the actions of the executives, it could be beneficial for the stockholders to incentivize the executives, by linking their compensation to firm performance. For instance, the *informativeness principle* of Holmstrom (1979) suggests that CEO compensation is based on stock returns, as these returns can be useful in determining which actions the CEO undertook.

2.2 Determinants of executive compensation

Over the years, empirical research finds that there are two most consistent determinants of executive compensation: stock returns and firm size.

2.2.1 Executive compensation and stock returns

Jensen & Murphy (1990) analyze the relationship between executive compensation and stockholder wealth (also called the *pay-for-performance*-relationship) for a sample of

manufacturing firms between 1969 and 1983. From this sample, they find that on average, CEOs receive $3.25 for every $1000 increase in stockholder wealth. This increase in CEO wealth, however, is largely captured by market-based compensation components as compared to CEO pay This relationship between CEO compensation and stockholder value would incentivize CEOs to make decisions that are beneficial for the firm, and is therefore a solution for the aforementioned principal-agent problem.

Mehran (1995) also finds evidence for this pay-for-performance relationship. In a sample of 153 manufacturing firms in 1979-1980, Mehran (1995) finds that both a firm's Tobin's Q and its return on assets are positively related to CEO compensation. More importantly, Mehran (1995) finds that the form, rather than the level of CEO compensation is positively related to firm performance measures. Equity-based compensation, as well as the shares held by top management, is positively related to firm performance. This is similar to the findings of Jensen & Murphy (1990), as I described above.

2.2.2 Executive compensation and firm size

Murphy (1998) provides an overview of existing literature on executive compensation. In this research, he provides a stylized fact of CEO compensation, namely that CEO compensation is higher in larger firms. Murphy (1998) provides an explanation for this stylized fact: the larger a firm, the more able it is to employ better-qualified and better-paid managers. Murphy (1998) also states that this positive relationship between CEO compensation and firm size is consistent across firms and industries.

2.3 CEO compensation and bank mergers

When researching the relationship between CEO compensation and mergers in the banking industry, the aforementioned determinants of CEO compensation come together: on the one hand, bank mergers lead to an increase of the size of the remaining bank. Considering the aforementioned research of Murhpy (1998), this merger activity should therefore lead to an increase in the compensation of the CEO of the remaining bank. Secondly, merger activity should logically lead to an increase in the value of the remaining bank. Looking at the research of Jensen & Murphy (1990) and Mehran (1995), this value creation should also lead to an increase in CEO pay.

Bliss & Rosen (2001) research the relationship between CEO compensation and bank mergers. They find that for every $1 million increase in assets through so-called *megamergers*, CEO compensation increase by $54. This increase in CEO pay is larger than the increase of CEO pay through internal asset growth, where a $1 million increase in assets only leads to a $30 increase in pay. This difference shows the extra effect of M&A-growth over internal asset growth.

2.4 Hypotheses

Based on the literature I have described in the previous sections, I have formulated three hypotheses:

The first hypothesis is based on the stylized fact that an increase in firm size will lead to higher CEO compensation, as described in the research of Murphy (1998):

Hypothesis 1: There is a significant positive relationship between the increase in size of a bank through M&A-activity, and the compensation of its CEO

The second hypothesis is based on the research of Bliss & Rosen (2001), who find that the effect of M&A asset growth on CEO compensation is larger than the effect of internal asset growth on CEO compensation:

Hypothesis 2: Asset growth through M&A has a significantly larger effect on CEO compensation than the effect asset growth outside of M&A has on CEO compensation.

The third hypothesis is based on the research of Jensen & Murphy (1990), who find a positive relationship between stock returns and CEO compensation:

Hypothesis 3: There is a significant positive relationship between a bank's abnormal stock return, and the compensation of its CEO

3. Data

For this research, the companies I am focusing on consist of national banks from the United States of America. The time period for my research spans from the year 1998 through 2007. With regards to compensation, the data spans from the year 2000 through 2007. As I use three-year lagged M&A data for this research, the total timeframe is from the year 1998 through 2007. I choose this period specifically, as it is characterized as an 'M&A-wave', with many mergers and acquisitions happening during this period.

The data I use for this research consists out of four components: 1) data regarding M&A deals a bank made over the chosen period, 2) data regarding the annual compensation the CEO of this bank receives, 3) annual fundamental data of the bank, and 4) data regarding stock prices of the bank. The collection of these data components, as well as the variables used in this research, will be discussed throughout this chapter.

3.1 M&A data

In order to analyze the relationship between M&A-activity in the banking industry and CEO compensation in this industry, I had to gather data regarding this M&A-activity. First, a selection of M&A-deals had to be made. This selection was made using Zephyr, a database from Bureau van Dijk containing information and data on M&A-activity. The data was gathered using the following selection criteria: first of all, the timespan of the data was from the years of 1998 through 2007, and the deal had to be completed within this period. Second, the acquiring firm has a US Standard Industrial Classification-code of 6021, meaning that it is a national commercial bank. Next, the acquiring company has to be located in the United States of America. Moreover, the percentage of the stake acquired had to be 100%, meaning that only complete mergers are included in the dataset. Lastly, the acquiring company had to be mainly listed on the New York Stock Exchange (NYSE). I choose this criterium as publicly listed banks often have more information available than privately listed banks. Because the NYSE is one of the largest stock exchanges in the United States, I expect much data to be available. However, this does mean that companies that are not listed on the NYSE are not included in this research. Using the aforementioned criteria, a total of 199 deals were selected from the database.

After I had made the selection of 199 M&A-deals from the Zephyr database, I needed to collect accompanying information and financial data: the completion date of the deal, as well as the total assets of the target company. The completion dates of the separate deals were included in the Zephyr-data. The total assets of the target company at the time of the M&A transaction, however, were not always included in the deal statements from Zephyr. This meant that I had to find a proxy for the total assets of the target company, for the deal statements which did not already include the total assets. In order to find a proxy for these total assets I used several sources: first, I looked at the SEC S-4 Form filings. Form S-4 is a form that is filed to the Securities and Exchange Commission in the United States in the case of a company merger. This form is filed by the acquiring company, and includes all sorts of financial information, including financial statements of the target company, like its total assets. This financial information was used as a proxy for the total assets of the target firm at the moment of the merger. When such S-4 Form filings were not available, I resorted to annual reports of the target company, as well as press statements regarding the merger. In total, 129 deals had accompanying financial information available, and were used to find matching compensation data.

3.2 Compensation data

For this research, the data regarding the annual compensation of bank CEOs was gathered from Execucomp, a database of Compustat – Capital IQ and accessed through Wharton Research Data Services (WRDS). Using the previously selected 129 deals, I collected data regarding the annual compensation of the Chief Executive Officers from the acquiring banks in these deals. This data spans from the year 2000 throughout the year 2007, resulting in 8 total years of data. The number of compensation observations available is 137, containing compensation data of 22 different banks. The amount of compensation observations is larger than the amount of deals I find. This is because some deals are applicable to multiple compensation observations, as I explain in the following subparagraphs. The names of these banks, as well as the number of observations per bank, can be found in Table 3.1.

Table 3.1: **List of banks and observations**

Bank Name	Obs.	Bank Name	Obs.
Associated Bancorp	8	Keycorp	8
Berkshire Hills Bancorp	1	M&T Bank Corp.	8
Capital One Financial Corp.	8	New York Community Bancorp Inc.	8
Central Pacific Financial Corp.	4	PNC Financial Services Group Inc.	8
Comerica Inc.	8	Prosperity Bancshares Inc.	5
Community Bank System Inc.	5	Regions Financial Corp.	8
Cullen/Frost Bankers Inc.	8	State Street Corp.	8
FNB Corp.	1	Synovus Financial Corp.	8
First Commonwealth Financial Corp.	3	US Bancorp	8
First Republic Bank	1	Webster Financial Corp.	8
Glacier Bancorp Inc.	5	Wells Fargo & Company	8

3.3 Fundamental data

For the 137 available observations for annual executive compensation, I collected matching fundamental company data. This data spans from the year 1998 through 2007, resulting in a total of 10 years of data. I collected this fundamental data from Compustat – Capital IQ, accessed through WRDS.

3.4 Stock data

The data regarding stock prices and returns of the 22 banks in the dataset was gathered from a database from the Center of Research in Security Prices (CRSP), accessed through WRDS. I collected data on stock prices and returns from 1999 through 2006, thus spanning 8 years in total.

3.5 Research variables

3.5.1 Dependent Variables

For this research, I use two different dependent variables. The first dependent variable is the total compensation a CEO received in a year, labeled *TotalComp*. This total compensation is comprised of the following compensation items: salary, bonus, other annual compensation, the total value of restricted stock granted, the total value of stock options granted (calculated using the Black-Scholes formula), long-term incentive payouts and all other total compensation items.

The second dependent variable is the total cash compensation a CEO received in year, labeled *CashComp*. This cash compensation is equal to the sum of the salary and the bonus a CEO received in a year. Both compensation items are measured in thousands of dollars.

3.5.2 Independent variables

The following independent variables are used: *MergerGrowth3, TotalAssets3, Non-MergerGrowth3, AR1 and ROE.* These variables will be explained below:

The variable *MergerGrowth3* is equal to the total asset growth of a bank solely through mergers, from the start of year *t*-2 until the end of year *t*. This asset growth is calculated by adding up the total assets of all companies acquired from the start of year *t*-2 until the end of year *t*. Because only acquisitions with a 100% stake are included in the dataset, it can be assumed that all assets of the target company are acquired through the merger. This variable is measured in millions of US dollars.

TotalAssets3 is equal to the amount of total assets that are in place at the respective bank at the beginning of the year *t*-2. This variable is also measured in millions of US dollars.

Non-MergerGrowth3 is defined as the total asset growth of a bank outside of the mergers and acquisitions included in the dataset, from the beginning of the year *t*-2 until the end of year *t*. This means that this variable contains the internal asset growth of a bank, as well as the asset growth through mergers that do not have a 100% stake. I calculate this variable by first of all determining the total asset growth of a bank from the beginning of the year *t*-2 until the end of

year *t*. To then calculate the total asset growth outside of M&A-activity, I subtract the previously defined *MergerGrowth3* from this total asset growth to determine the total growth of assets outside of the M&A-activity of a bank. This variable is measured in millions of US dollars.

The variable *AR1* is defined as the abnormal return on the stock of the respective bank, in year *t*-1. In order to calculate this abnormal return, I first establish the annual return on the stock of the respective bank. I calculate this return using the following formula:

$$Annual\ return = \frac{First\ opening\ price\ of\ the\ year - final\ closing\ price\ of\ the\ year}{First\ opening\ price\ of\ the\ year}$$

I then measure this annual return on the company's stock against the annual return of a benchmark. As a benchmark, I use the annual return on the S&P 500, as it is a well-diversified index that reflects the general state of the United States' economy. I calculate the annual return on the S&P 500 using the same formula for the annual return on a bank's respective stock. Finally, I calculatd the abnormal return on a bank's stock by subtracting the annual return on the S&P 500 from the annual return on the stock.

Finally, *ROE* is defined as the respective bank's Return on Equity. I calculate this ROE using the following formula:

$$ROE = \frac{Annual\ net\ income}{Stockholders'\ equity}$$

The following Table 3.2 contains descriptive statistics on the dependent and independent variables I used:

Table 3.2: Descriptive statistics research variables

Variable	Obs.	Min.	Max.	Mean	Std. Dev.
TotalComp	**137**	**103.81**	**92313.28**	**7215.69**	**10110.10**
CashComp	**137**	**0**	**8495**	**1533.55**	**1619.93**
MergerGrowth3	**137**	**0**	**84810.73**	**6832.79**	**15524.09**
Non-MergerGrowth3	**137**	**-11656.30**	**149200.80**	**15037.58**	**28452.89**
TotalAssets3	**137**	**703.07**	**427849**	**49258.19**	**73589.76**
AR1	**137**	**-0.780**	**0.803**	**-0.031**	**0.297**
ROE	**137**	**0.009**	**0.241**	**0.137**	**0.044**

4. Methodology

In this chapter, I describe the statistical methodology used to test my stated hypotheses, and to formulate an answer to this research question. The methodology used reflects a part of the methodology used in Bliss & Rosen (2001), in an attempt to replicate their results in my chosen time period. The methodology I use for this research is twofold. The two parts of this methodology are described in this chapter. Finally, all methods described in this chapter are be performed using Stata.

4.1 Regression analysis

The first part of the methodology I use for my analyses consists out of multiple regressions. This is in accordance with the research of Bliss & Rosen (2001), who also used regression analyses to test their theories. First, I use multivariate OLS-regressions in order to discover the relationship between CEO compensation, M&A-activity and firm performance. Second, I add company fixed effects to these regressions in order to distinguish between an actual association between compensation and M&A-activity, and effects that do not vary amongst firms and in time. I describe these methods in more detail in the following subparagraphs.

4.1.1 Multivariate OLS-regression

As described above, I first use multivariate Ordinary Least Squares-regressions to test my hypotheses. I use two separate regressions, with different dependent variables. In the first regression, the dependent variable is the total compensation a CEO receives per year, defined in the data-section as *TotalComp*. In the second regression, the dependent variable in the cash compensation, defined in the data-section as *CashComp*. These two regressions follow the following formula:

$$Compensation_{i,t} = \alpha_0 + \beta_1 * MergerGrowth3_{i,t} + \beta_2 * Non - MergerGrowth3_{i,t} + \beta_3 * TotalAssets3_{i,t} + \beta_4 * AR1_{i,t} + \beta_5 * ROE_{i,t} + \varepsilon_{i,t}$$

The independent variables used in these regressions have been previously defined in the data-section of this research. The variables of interest in these regressions are *MergerGrowth3, Non-*

MergerGrowth3 and *AR1*. In accordance with my hypothesis 1 and the research of Bliss & Rosen (2001), it is expected that β_1 is positive, and significant at the 5% significance level. Furthermore, in accordance with hypothesis 3 and Jensen & Murphy (1990), it is expected that β_4 is positive, and significant at the 5% significance level. The importance of *Non-MergerGrowth3* is discussed in the next paragraph. In order to control for heteroskedasticity in the regression residuals, I used robust standard errors.

As control variables, I use *TotalAssets3* and *ROE*, as defined in the data-sections. The total assets in place at time *t*-2 control for the size of the respective company, as Murhpy (1998) finds that CEO compensation is positively related to firm size. Next to this, I use the Return on Equity as a control variable.

4.1.2 Fixed effects

As the dataset I used for this research consists of observations of multiple banks over multiple years, the dataset consists of both a cross-sectional and a time-series dimensions. This means that I am dealing with panel data. In panel data, an important problem could be that something within an individual company could impact or bias the variable of interest, namely merger total asset growth. In order to control for this impact or bias, I use the same regressions as in subparagraph 4.1.1, but using Fixed Effects. These fixed effects remove the time-invariant characteristics of the company in my dataset, in order to access the net effect of the dependent variable of interest. Here, the cross-sectional element of these fixed effects is the different companies, and the time-series element is the different years of the observations.

4.2 F-tests

The second part of my methodology is aimed at analyzing my second hypothesis, namely that the effect of total asset growth through M&A-activity on CEO compensation is significantly larger than the effect of asset growth outside of M&A on CEO compensation. I test this hypothesis using F-tests; one for each multivariate regression specified in the previous paragraph. These tests are performed on Stata, following the following the following hypotheses:

$$H_0: \beta_1 = \beta_2$$

$$H_a: \beta_1 > \beta_2$$

In accordance with the research of Bliss & Rosen (2001), it is expected that the null hypothesis is rejected at the 5% significance level.

5. Results

In this chapter, I present the results of the analysis of my hypotheses. I first present the results of the multivariate regression analysis. Next, I present the results of the analysis using company fixed effects.

5.1 Multivariate regression results

Table 5.1 shows the results of the two multivariate regressions I ran:

Table 5.1 Multivariate regression results

Variable	Total Compensation	Cash Compensation
MergerGrowth3	0.170***	-0.009
	(0.029)	(0.008)
Non-MergerGrowth3	0.062***	0.016*
	(0.018)	(0.008)
TotalAssets3	0.021	0.010**
	(0.014)	(0.005)
AR1	6607.65*	169.56
	(3676.48)	(364.93)
ROE	50334.08**	2772.09
	(24753.87)	(2435.14)
Constant	-2637.92	485.14
	(2387.2)	(301.63)
Observations	137	137
R^2	0.3213	0.4514
Firm fixed effects	NO	NO
Year fixed effects	NO	NO

*Note. Standard errors are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.*

From these results, several remarks can be made. First of all, the results show that total asset growth through mergers does have a positive effect on total CEO compensation: the coefficient of 0.170 means that for every $1 million total asset growth through mergers, a CEO earns $170

of extra total compensation. This positive effect is highly statistically significant, with a p-value smaller than 0.01. These results are in line with hypothesis 1.

Secondly, the results show that total asset growth outside of M&A also has a positive effect on total compensation: every $1 million total asset growth outside of M&A means that a CEO earns $62.10 more. This effect is also statistically significant at the 1%-significance level. With regards to the second hypothesis, the F-test gives a p-value of 0.001. This p-value means that the effect asset growth through mergers has on total CEO compensation is significantly larger than the effect asset growth outside of mergers has on this compensation. These results are therefore in line with hypothesis 2.

These results correspond with the research of Bliss & Rosen (2001), who find a similar positive effect of asset growth through mergers on total compensation. The magnitude of the effect of Bliss & Rosen (2001), however, is much smaller: $58.84 compared to my $170. The result that the effect of asset growth through mergers on total compensation is significantly larger than the effect of non-merger asset growth on total compensation is also similar to the research of Bliss & Rosen (2001). These results are also in line with the research of Murphy (1998), who presented the stylized fact that CEO compensation gets larger as firms get larger. Both merger growth as non-merger growth has a significant positive effect on total compensation.

Furthermore, the results show that the abnormal stock return of a bank the previous year also has a positive effect on total compensation. The coefficient of 6607.65 means that an increase of abnormal returns with one percent point is associated with an extra $66076.50 in total compensation. This effect is significant at the 10%-significance level. These results are in therefore in line with hypothesis 3, but only with weak significance.

With regards to cash compensation, however, the results are not as significant. The regression analysis shows that asset growth through mergers does not have a significant positive effect on CEO cash compensation. This result is therefore not in line with hypothesis 1. Furthermore, the analysis shows that non-merger asset growth does have a weak significantly positive effect on CEO cash compensation. The F-test I subsequently performed shows that the effects of merger growth and non-merger growth are not equal to one other at the 5%-significance level. These results are not in line with hypothesis 2, which states that the effect of merger growth on compensation is significantly larger than the effect of non-merger growth on compensation.

Lastly, the abnormal stock return also does not have a significant effect on cash compensation. This means that for cash compensation, this result is not in line with hypothesis 3.

5.2 Fixed effects results

Table 5.2 shows the results of the regressions I ran using fixed effects:

Table 5.2 Regression results with fixed effects

Variable	Total Compensation	Cash Compensation
MergerGrowth3	0.040	-0.006
	(0.068)	(0.009)
Non-MergerGrowth3	0.008	-0.008
	(0.060)	(0.008)
TotalAssets3	0.010	-0.007**
	(0.025)	(0.003)
AR1	5884.62**	177.98
	(2500.26)	(345.60)
ROE	14123.68	4701.41
	(26378.82)	(3646.25)
Constant	4571.59	1424.94**
	(4437.16)	(613.33)
Observations	137	137
$\boldsymbol{R^2}$	0.2387	0.3301
Adjusted $\boldsymbol{R^2}$	-0.1751	-0.1370
Firm fixed effects	YES	YES
Year fixed effects	YES	YES

*Note. Standard errors are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.*

The results of the regressions using company and year fixed effects are drastically different from the regression results without using fixed effects. First of all, the negative adjusted R^2 shows that the explanatory power of the variables in the fixed effects regression is very low, which is quite different from the results of the multivariate OLS-regressions. With regards to total compensation, only the abnormal stock return has a positive effect at the 5%-significance level. With regards to cash compensation, this effect is not statistically significant. This means

that for total compensation, these results are in line with hypothesis 3, while they are not in line with regards to cash compensation.

Both the effect of merger growth and the effect of non-merger growth on total compensation and cash compensation are not statistically significant. This means that both hypotheses 1 and 2 are rejected, for both total compensation and cash compensation. These results are drastically different from the multivariate regression results, and the results of Bliss & Rosen (2001). Therefore, it would seem that the significantly positive effects I find in the multivariate regression results are entirely captured by time-invariant company characteristics.

For cash compensation, the total assets of a firm three years prior do have a significant effect. However, the effect is negative instead of positive. This is opposite to the stylized fact of Murphy (1998) that larger firms pay their CEO more.

6. Conclusion and discussion

In this chapter, I first draw conclusions based on the results of my analyses. Then, I discuss the internal and external validity of my research and discuss any possible limitations to this research.

6.1 Conclusion

My research was based around the following research question:

What is the effect of M&A activity on CEO compensation in the banking industry in the years 2000-2007?

In order to formulate an answer to this research question, I formed three hypotheses based on different aspects of M&A-activity and CEO compensation.

With regards to my first hypothesis, I have the following findings: using multivariate OLS-regressions, a firm's total asset growth through mergers has a significant positive effect on total compensation. I find that for every $1 million increase in assets through mergers, a CEO has an extra total compensation of $170 dollars. This effect is significantly positive at the 1%-significance level. This effect is also in accordance with the finding of Murphy (1998) and Bliss & Rosen (2001). However, compared to Bliss & Rosen (2001), the magnitude of my coefficient is much greater. The effect only exists for total compensation, not cash compensation. In addition to this, when including firm and year fixed effects the effect of asset growth on total compensation almost completely disappears. This would mean that the effect of asset growth on compensation is almost totally captured by a firm's time-invariant characteristics, and that the effect likely differs per firm in the dataset.

With regards to the second hypothesis, comparing the effect of merger growth and non-merger growth on CEO compensation, I find that in general, the effect of asset growth through mergers on total compensation is significantly larger than the effect of non-merger asset growth on total compensation. This finding is also in accordance with the research of Bliss & Rosen (2001). This would mean that the dimension of mergers in asset growth has an extra effect over non-merger asset growth, and that a CEO is rewarded more when asset growth happens through

mergers. However, this effect only exists for total compensation, not for cash compensation. Again, the significance of these results disappears when considering fixed effects.

For my third hypothesis, I find that the abnormal stock return of a firm in the previous year has a weakly significant positive effect on total compensation. The effect is not significant for cash compensation. When considering company and year fixed effects, the effect of this abnormal return on compensation becomes more significant for total compensation. The effect remains insignificant for cash compensation. This means that for total compensation, my findings are in accordance with the findings of Jensen & Murphy (1990) and Mehran (1995).

My results have the following implications: first of all, it could be beneficial for banks to tie total compensation to firm performance. The results show that abnormal stock returns have a significantly positive effect on total CEO compensation. This positive relationship may incentivize a CEO to make decisions that are beneficial to the value of the company, for instance by completing mergers that add value to the company. This could therefore be a (partial) solution to the principal-agent problem proposed by Jensen & Meckling (1976), as it provides a way to align the incentives of the stockholders and the CEO. Second, the results of the F-test without fixed effects provide the CEO with an incentive to create value through mergers, instead of creating value through internal growth. This is the case as the effect of asset growth through mergers on total compensation is significantly larger than the effect of internal asset growth on total compensation. This incentive could also have its downsides, as the CEO might complete mergers that do not necessarily add value to the company.

6.2 Discussion

6.2.1 Internal validity

Like much qualitative research, my research is accompanied with problems for its internal validity. First of all, the results are heavily dependent on the data I selected. For instance, the data only consists of banks listed on the New York Stock Exchange. As there are many more stock exchanges in the United States, only selecting the NYSE could have biased the results.

A second problem for the internal validity of my research is omitted variable bias (OVB). There are many variables, both observable and unobservable, which could influence both my dependent and independent variables. This OVB means that my research could be biased,

threatening the internal validity. Furthermore, this OVB means that my results only show an association between variables, not a causal relationship. To truly show a causal relationship, I would have had to include all variables that influence CEO compensation, which is impossible.

Lastly, another problem for the internal validation of my research is the relatively small number of observations. As the number of observations grows, the results are more trustworthy and therefore increase internal validity. My relatively small dataset could mean that the results are not entirely internally valid.

6.2.2 External validity

When discussing external validity, the question is whether the results of my research can be generalized to other situations. Firstly, the sample period for compensation of my research was from the year 2000 through 2007. This period cannot be easily compared to other time periods, for example 1938 until 1947, as the world of corporate finance and economics in general is everchanging.

Next to the sample period, my research only focusses itself on banks located in the United States of America. It is therefore difficult to generalize my results to other areas of the world, like Europe, as this area could have different legislation with regards to corporate governance, antitrust, and other areas related to M&A. These elements of my research make it difficult to generalize my results to other situations, like time periods and countries.

6.2.3 Limitations

In my research, I discovered quite some limitations. First, my research was heavily limited to the availability of data. For instance, many deals selected from the Zephyr-database did not have accompanying financial data, and no proxies were available. This meant that I could not include these deals in the final dataset. In addition to this, not all banks had available compensation data, which meant that I also had to delete those from the dataset. Further research could find ways to eliminate these limitations and get a more valid set of results.

7. References

Bliss, R. T., & Rosen, R. J. (2001). CEO compensation and bank mergers. *Journal of financial economics*, *61*(1), 107-138.

Business Insider Nederland. (z.d.). *Bonusfeest voor bazen Ahold en Delhaize: als overname 'succes' wordt, is het kassa*. Accessed on 25 July 2022, from https://www.businessinsider.nl/bonusfeest-voor-bazen-ahold-en-dehaize-als-de-fusie-succes-wordt-is-het-kassa-610868/

Holmström, B. (1979). Moral hazard and observability. *The Bell journal of economics*, 74-91.

Jensen, Michael C. & Meckling, William H., 1976. "Theory of the firm: Managerial behavior, agency costs and ownership structure," Journal of Financial Economics, Elsevier, vol. 3(4), pages 305-360, October.

Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of political economy*, *98*(2), 225-264.

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of financial economics*, *38*(2), 163-184.

Murphy, K. J. (1999). Executive compensation. *Handbook of labor economics*, *3*, 2485-2563.