Does growing up during a global recession cause CEOs to act more risk-seeking in US M&A transactions?

Master Thesis Economics & Business: Financial Economics

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Abstract

This thesis examines the effect of growing up during a recession on the decision-making process of CEOs and board members in US M&A transactions in the period 2002 until 2022. To measure the extent of risk-seeking a bigger percentage acquired will be determined as risk-seeking behavior, because of the uncertain nature of M&A transactions. This thesis finds that CEOs who experienced a recession exhibit more risk-seeking behavior in M&A transactions. Board members who also have relatively high recession experience exhibit the same behavior. The M&A transactions performed by recession CEOs do not generate worse announcement returns than CEOs without recession experience.

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1 Introduction

In early economic theory it is assumed that agents are rational and make decisions based on facts. Over the past decades behavioral economics and behavioral finance have been developing research fields with for example Tversky and Kahneman (1979) researching unexpected behavior such as loss aversion and Malmendier and Tate (2005) researching belief distortions like overconfidence. This research has shed a light on how managers and board members act, and how it influences decision-making processes. The impact of unexpected behavior or belief distortions can be enormous; Malmendier and Tate (2008b) find a significantly worse announcement effect of Merger and Acquisition (M&A) transactions for CEOs that are classified as overconfident.

Because of the magnitude of the possible impact, and because behavioral finance is a developing research field it is valuable to learn what other factors might influence the decision-making process of CEOs. Therefore, the research question of this thesis is: *Does growing up during a global recession cause CEOs to act more risk-seeking US M&A transactions?* For this analysis, a bigger stake of the target company that is being acquired will be considered risk-seeking behavior. This follows from Smit and Kil (2011) who argue that there is a lot of uncertainty in M&A transactions. There is uncertainty about the value, about the benefits of scale and integration opportunities. They therefore argue that acquirers should more often use a minority investment as a way to learn about the company and as a real option, only to then later on decide if they want to fully acquire the target. This percentage acquired is linked with the CEOs in charge of the M&A transactions and their birth years, to obtain results about their recession experience. Growing up during a recession will be defined as the ages twelve until eighteen, following from Webley (2005), who argues that children become fully aware of the workings of economic principles at the age of twelve.

Besides CEO experience, this thesis will also take into account board members in charge during an M&A transaction and their recession experience, to analyze if their presence has a mitigating effect, or if it only enhances the magnitude of the effect. Lastly this thesis will also look into the announcement returns of M&A transactions done by recession CEOs.

This thesis uses M&A transactions that have happened from 2002 until 2022 within the United States, for which the acquirer is an S&P 500 company. The results indicate that experiencing a recession during the ages twelve until eighteen does lead to a higher percentage acquired in M&A transactions, therefore risk-seeking behavior. The same is true for board members, which

suggests that a board with similar experiences fails to look at challenges from different viewpoints. Lastly, the M&A transactions do not underperform the market, meaning that even though the behavior might be classified as risk-seeking the market does react positively to transactions being performed by recession CEOs. This thesis adds to existing literature by further researching which factors cause belief distortions. Besides that, it analyzes a new channel in which this behavior is exhibited.

The remainder of the paper is organized as follows. In section 2 the theoretical framework of this thesis will be laid out, specifically earlier research done into managerial characteristics, recession CEOs and risk averseness in M&A transactions will be researched. Section 3 will describe the data that is being used in this thesis. In section 4, the methodology will be explained. Section 5 consists of results. Finally, section 6 concludes.

2 Theoretical framework

2.1 Managerial characteristics

What makes a CEO the CEO he or she is? As Malmendier laid out in Behavioral Corporate Finance (2018), behavioral finance is a growing field of research since around 2000, which consists of broadly three different areas: biased investors, biased managers and biased third parties. Within the field of biased managers, Malmendier (2018) specified three subcategories: non-standard preferences, cognitive fallacies and belief distortions. Non-standard preferences are deviations from decision-making processes as known in classical economic theory. Cognitive fallacies are defined as mental shortcuts and limitations in the decision-making process. Belief distortions defined as experiences that influenced the decision-making process of the agent. Recession experience is therefore part of this subcategory.

The most researched bias is the overconfidence bias (Roll, 1986) which explains that managers tend to be overconfident. Roll explains this by arguing that bidders do not account for the winner's curse. Roll also argues that managers have very little time to learn from past mistakes, as they do not perform a lot of transactions in their lifetime. Secondly, a CEO might also show overconfidence effects because of his overestimation of the precision of signals and ability to predict financial or macroeconomic events. Overconfidence is most often determined by looking at a manager's personal portfolio decisions (Malmendier and Tate, 2005). Their overconfidence can be driven by a few factors such as inside information, signaling, tax considerations, procrastination, and risk tolerance. Heaton (2002) further researched the hubris hypothesis and argued that it stems from managers overestimating the returns of their own projects. Managers still invest in negative net present value projects, even if they are loyal to their shareholders.

The first subcategory defined by Malmendier (2018) is non-standard preferences. An example is prospect theory (Tversky and Kahneman, 1979), which explains why economic agents apply different weights to gains and losses, and why the utility function of agents can be asymmetric from a certain reference point. Another fallacy is the wage fallacy, Goel and Thakor (2009) argue that managers compare wage with peers, which leads to a feeling of envy which can then cause a CEO to pursue more M&A activity. The reason that CEOs will undertake more M&A activity as a result of the perceived envy is because firms that have grown due to M&A activity typically pay the CEO more, when the firm has grown. Cronqvist et al. (2012) find that personal risk taking is correlated with corporate risk taking. This is primarily shown in the comparison

between the leverage on their home purchases and the leverage of the firm. Hilary and Hui (2009) show that risk taking is less for CEOs headquartered in a more religious area as measured by variance in return on assets and equity returns. These firms also exhibit less R&D spending. Their investors react positively to this strategy, indicating an awareness amongst the investors. Malmendier and Tate (2008a) argue that CEOs who reach a certain status consistently underperform themselves prior to reaching this status. They reach this status by winning awards of popular magazines or organizations. While they underperform their past selves, after they won an award, they do earn more and engage in more distracting activities such as writing memoirs, taking board seats.

The second subcategory defined by Malmendier (2018) is cognitive fallacies, these fallacies have influence on a CEOs decision-making process. Graham et al. (2012) researched what decision drivers are for CEOs and found multiple of these fallacies. CEOs for example take reputation and confidence of the overseeing manager into account, “gut feeling” is also a key factor on which capital allocation is based.

2.1.1 Recession CEOs

Besides cognitive fallacies and non-standard preferences, Malmendier (2018) defined belief distortions as the last subcategory that can cause unexpected behavior. Belief distortions are experiences in a manager’s life, which influence their decision-making process in the future. Malmendier et al. (2011) find that CEOs who grew up during the Great Depression tend to rely on internal cash flows rather than on external financing. In this paper they include CEOs born in the decade leading up to the Great Depression. This is based on the psychological effect that depression experience discourages people to participate in capital markets (Graham and Narasimhan, 2004). They argue that this is the fact because high levered firms during the Great Depression use relatively little debt in the 1940s. The effect is stronger if the company’s president is still in charge, implying that this is an individual-specific effect. Besides this, the paper by Malmendier et al. (2011) also found that CEOs who served in the military more often pursue aggressive strategies with high leverage.

Schoar and Zuo (2017) find that CEOs who start their career during a recession tend to take longer to become a CEO, tend to rise through the ranks within a firm instead of joining a different firm, and end up as a CEO at smaller firms. The fact that they take longer to become CEO might be related to the fact that managers are judged on the performance of the firm or team they are managing and if they started during a recession, it is likely the firm is performing

relatively poorly. Lastly, CEOs who started working during a recession spend significantly less on R&D, which indicates their more conservative and cautious approach.

Dittmar and Duchin (2015) argue that experiencing distress in the past, including bankruptcy, influences a CEO and leads to a more conservative strategy. This is shown in the fact that these firms have less debt, more cash and invest less. The effects of experiencing distress are clearer when they are recent or if they happened during salient periods in a manager's career.

Aside from the previous arguments, there is a second school of thought presented by Bernile et al. (2017), who argue that experiencing disasters without extremely negative consequences leads to more corporate risk-taking for CEOs. CEOs with such experiences announce more acquisitions, have higher leverage and less cash. This study looked at natural disasters nearby where CEOs grew up and they discovered an inverse U relation to the CEOs risk taking, meaning that mild disasters lead to more risk-taking up until a certain threshold where the CEO turned out more cautious.

2.1.2 Risk aversion in M&A transactions

An M&A transaction always comes with a degree of uncertainty regarding the value, the market and the synergy opportunities. To mitigate these uncertainties a company could consider a toehold acquisition, in which it first acquirers a minority share and later on considers to takeover the entire company, based on the results of the minority stake. These shares are acquired in the market. Even though this seems like a valid way to mitigate uncertainties, Smit and Kil (2011) argue that only 5% of deals executed are a minority investment. They link this to executives' hubris, bounded rationality, fear of missing chances and personal decision bias. CEOs being defined as overconfident reduces the chance of a minority investment with 33%. Betton et al. (2008) argue that the use of a toehold acquisition is also beneficial in negotiations, because the toehold increases the chance of winning control of the target. This is because the acquirer than already possesses a bigger share of the target than the competition. Besides that, Betton and Eckbo (2000) find that a greater toehold is associated with a lower bid premium. This is attributable to the fact that after the toehold, a part of the uncertainty has been taken away.

Ouimet (2012) adds to this by analyzing the minority acquisitions that are being done and argues that the reasons for a minority acquisition are keeping managerial incentives intact or when valuation is uncertain. This implies that for the minority transactions that are being done, the incentives about uncertainty are in place.

2.2 Risk mitigation in board

Besides the CEO, board members of a company also have influence in the decision-making process around an M&A transaction. Akbar et al. (2017) argue that the presence of non-executive board directors and powerful CEOs in corporate boards reduces corporate risk taking. This can be explained within the agency theory, which argues that managers are more risk averse, because of reputational and employment risk. Besides that, Watson et al. (1993) argue that a more diverse board leads to more perspectives and broader knowledge, causing a competitive advantage.

Lastly, Gani and Jermias (2006) argue that board independence, meaning more board members who are not directors, improves performance if the company is pursuing a cost efficiency strategy, these results do not hold for firms pursuing an innovative strategy. As M&A transactions can be seen as innovative, it could be the case that board independence does not have a clear effect for firms active in M&A transactions.

2.3 Announcement returns

Even though M&A transactions are a big part of a company's strategy, it might not be as profitable as it seems. Moeller et al. (2005) find that shareholders lost $220 billion from 1980 until 2001 at the announcement of merger bids. This is explained by multiple reasons, first of all because mergers happen in merger waves in which valuations are higher. A higher valuation will lead to a higher price that will be paid, which then again is less likely to be a profitable investment. Moreover, overconfidence of CEOs causes companies to bid higher and pursue more M&A transactions, both will decrease the deal quality (Malmendier and Tate, 2008).

2.4 Research question and hypotheses

Bernile et al. (2017) lay out a framework of risk-taking by CEOs that is shaped like an inverse U curve. This would mean that the magnitude of negative experiences is taken into account and therefore implies that negative experiences can lead to risk-seeking behavior until a certain threshold. After that threshold, experiencing negative experiences will lead to risk averse behavior. This inverse U curve can be attributed to the fact that individuals learn from experiences and find out what the downsides are, after they have experienced for example a recession. Even though this is not in line with Malmendier et al. (2011), it could be possible that experiencing the Great Depression would be on the right-hand side of the curve. The Great Depression lasted longer than recent recessions and has also had a bigger impact. CEOs who

grew up during a milder recession than the Great Depression might have actually benefited from it and become risk-seeking. That is attributable to the fact that in case of mild recession, their expected downside is not as low as individuals who have experienced an extreme recession. This thesis mainly focusses on this middle part of the inverse U curve, because that is where CEOs could possibly become more risk-seeking. This leads to the main research question of this thesis: *Does growing up during a global recession cause CEOs to act more risk-seeking in US M&A transactions?*

Combining the observed effects on belief distortion by Malmendier et al. (2011) with the observed inverse U curve by Bernile et al. (2017) leads to the expectation that experiencing a recession could also have positive effects. Smit and Kil (2011) argued more cautious and financial conservative behavior would be to participate in minority M&A transactions. Therefore, the expectation is that CEOs who become more risk-seeking because of their recession experiences execute less minority investments

Hypothesis 1: *CEOs who grew up during a recession exhibit more risk-seeking financial policy and are less likely to pursue a minority investment*

CEOs are not solely responsible for M&A activity. Besides strong governance rules, the board of a company also plays a role in M&A transactions. However, these boards consist of individuals as well, so they can also have biased views. Following from Akbar et al. (2017) and Watson et al. (1993), diversity in a group mitigates risk and improves results. Besides that, board independence also reduces corporate risk-taking. If a board has a diverse background of people who did or did not grow up during a recession, the expectation is that this will mitigate the effects of a CEO growing up during a recession. This also means that if there is no diversity of experiences and board members have similar recession experiences it will cause risk-seeking behavior.

Hypothesis 2: *If a higher percentage of the board grew up during a recession, the company will be less likely to pursue a minority investment*

The value of M&A transactions is often measured by examining the announcement returns, which are measured as the abnormal stock returns from a shortly before until shortly after the announcement of the M&A transaction. M&A transactions that are performed by CEOs who act out of non-rational beliefs are more likely to show negative announcement returns. Because the decreased likeliness of pursuing minority M&A transactions, growing up during a recession is a characteristic that is considered to cause belief-distortion that underestimates risk. In line

with other risk-seeking characteristics such as overconfidence (Malmendier and Tate, 2008), the expectation is that CEOs who grew up during a recession underperform the market.

Hypothesis 3: *Growing up during a recession does not lead to market-outperformance of announcement returns of M&A transactions*

3 Data & sample selection

3.1 Company data

For this thesis M&A transactions performed by current S&P 500 companies are being studied. The S&P 500 is an index compiled of the biggest listed companies in the USA measured by market cap. The S&P 500 consists of in total 500 companies divided over multiple industries, as shown in Figure 1.

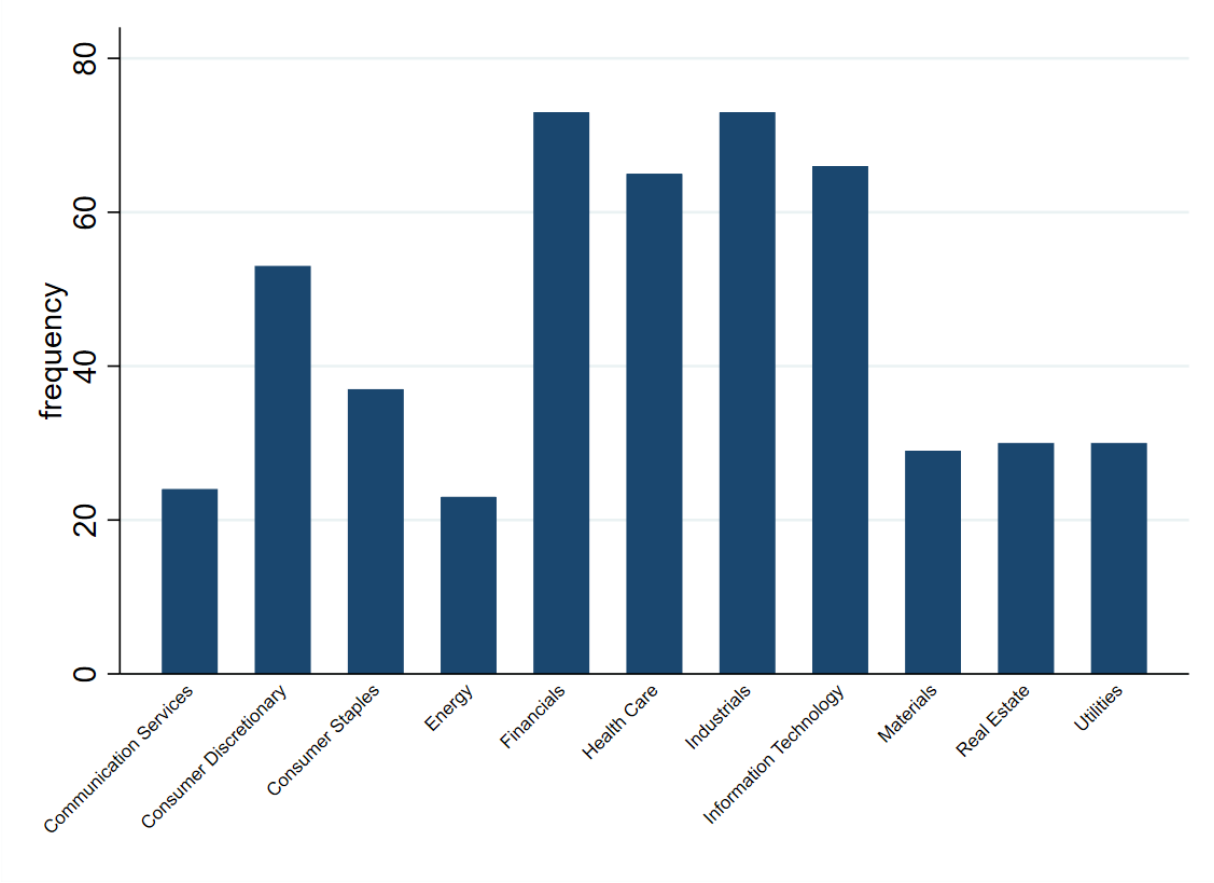

Figure 1: Industry analysis S&P 500

3.2 Recession, CEO, and board data

3.2.1 Recessions

For recessions, a list is compiled of all years in which there were global recessions. Global data is used, because board members and CEOs of American companies can have different nationalities and could also have grown up in different countries than where they were born. A recession is defined as two quarters of Gross Domestic Product (GDP) decline. This leads to nine recession years: 1929, 1930, 1931, 1932, 1975, 1982, 1991, 2009 and 2020.

3.2.2 CEOs

To link the M&A data to CEO and board data, a dataset from Execucomp is used that describes characteristics about all board members in the given dataset from January 2002 until December 2022. For four companies there are no observations, and for multiple companies there is missing data for one year or multiple years. The missing observations are dropped. This is because some companies were not public in 2002 yet, or there was no data about the board in this period. In total there are 52,182 observations, of which 8,805 CEO observations, with 1,339 unique CEOs.

Besides the birthyear, this thesis will also use data about the gender of the CEO, because research shows that males and females differ in their risk perception and willingness to take risk (Gustafson, 1998; Croson and Gneezy, 2009; Charness and Gneezy, 2012).

Analyzing the birthyear of CEOs, the observations that include data about the CEOs age are used. This reduces the sample from 8,805 to 8,775. Cutting this down to unique observations leads to 1,339 CEOs. As shown in Figure 2, the pattern is normally distributed. Figure 2 also shows the years during which a global recession happened minus twelve to find out if CEOs born in certain years are twelve during a recession. There does not appear to be a pattern.

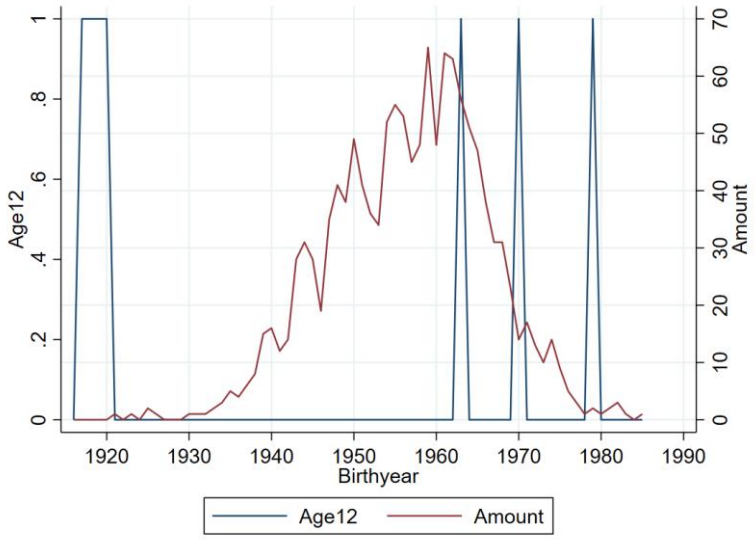

Figure 2: CEO per birthyear and recession years when CEOs are twelve

In Table 1 the descriptive statistics of CEOs are displayed, it shows that of the 1,339 CEOs 5.4% experienced a recession at age twelve, compared to 7.9% at age eighteen.

Table 1: Descriptive statistics for recession experience for CEOs

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Recession 12	1,339	.054	.226	0	1
Recession 13	1,339	.065	.247	0	1
Recession 14	1,339	.073	.261	0	1
Recession 15	1,339	.063	.243	0	1
Recession 16	1,339	.084	.277	0	1
Recession 17	1,339	.081	.274	0	1
Recession 18	1,339	.079	.270	0	1

It is notable that CEOs are older on average than other board members, leading to the fact that the variable *Experienced a recession at age 18* for CEOs more often refers to 1975 than 1982, whereas this is the other way around for board members. See Appendix A for additional descriptive statistics on CEO data.

3.2.3 Board data

The M&A data will also be linked to data about the entire board, excluding the CEO. This dataset consists of 38,243 observations for the given companies from January 2002 until December 2022. This dataset is smaller than the entire dataset minus CEOs, which is because some board members also have CEO experience, those are excluded. 7,932 of the observations are unique board members. Again, for four companies there is missing data in each year and for multiple companies there is missing data in some years, most often because the companies were not listed on the stock exchange at the time. The distribution of the birthyears is shown in Figure 3 together with the years in which board members would need to be born to be twelve during a global recession.

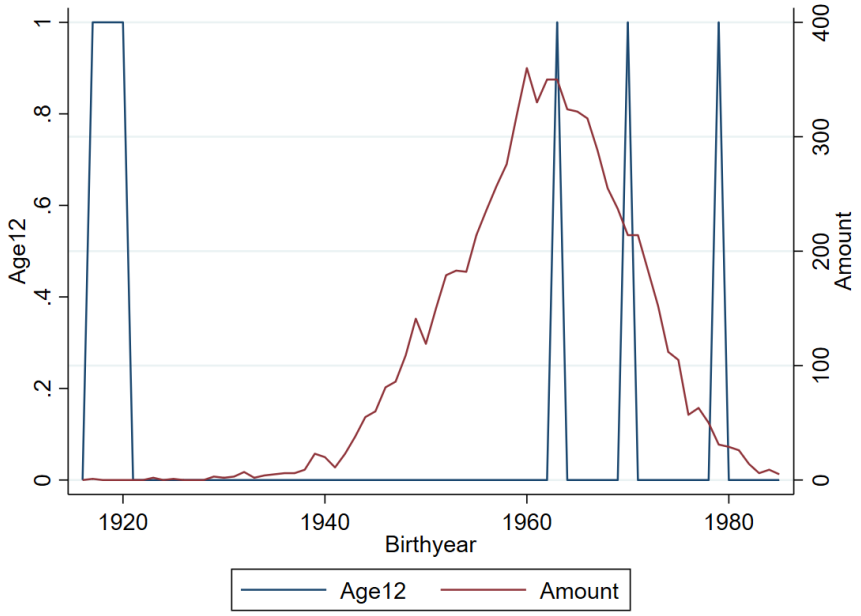

Figure 3: Board member per birthyear and recession years when board members are twelve

In Table 2 recession experience for board members, excluding CEOs, is shown. It shows that 8.2% of the board members experienced a recession at age twelve, which is higher than the 5.4% of CEOs who experienced recessions as shown in Table 1. All means are higher than the means observed in Table 1, meaning that on average fewer CEOs have experienced a recession during the given ages. Additional descriptive statistics on board member data can be found in Appendix A.

Table 2: Descriptive statistics for recession experience for board members

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Board recession 12	7,225	.082	.275	0	1
Board recession 13	7,225	.088	.284	0	1
Board recession 14	7,225	.090	.286	0	1
Board recession 15	7,225	.098	.297	0	1
Board recession 16	7,225	.102	.304	0	1
Board recession 17	7,225	.098	.298	0	1
Board recession 18	7,225	.101	.302	0	1

3.3 M&A data

To link the M&A data to CEO and board data, a dataset from Capital IQ is used that describes all M&A activity in which the related company is one of the companies in the S&P 500. The

dataset stretches from January 2002 until December 2022 and the dates are when the transaction is announced.

Because some of the acquisitions are done in different currencies than USD, those are left out, leaving 15,601 observations. Leaving only USD observations ensures that the transactions size can be compared, and that there is no currency or country risk incorporated in the transaction size or stake. The distribution of this sample is shown in Table 3. It consists of 9,321 transactions that have a recorded transaction size, of which the mean is 1,363.021 million USD.

Table 3: descriptive statistics transaction size and percent acquired

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Minimum*	(5) *Maximum*
Transaction size (Million dollar)	9,321	1363.021	6425.711	0	192826
Percent acquired	14,210	91.784	22.726	0	100

There is more data on the stake acquired, namely 14,210 of which the average stake is 91.78%. Only 1,083 transactions are smaller than 50%, which accounts for 7.6% of the sample.

When the resulting observations are split across sectors, it is shown that in principal sectors that are more represented in the S&P 500 also execute more deals, there are for example more IT firms, consequently there are more M&A transactions performed by IT firms. Besides deal frequency, the deal size also differs per sector. Across the observed deals there are multiple different existing relations between the acquirer and the target. The most common relations are prior subsidiaries, current subsidiaries, and merged entities. In Appendix A additional descriptive statistics on M&A data is provided.

3.4 Stock price data

To get a better understanding of the impact of the M&A transactions, the daily stock price data is gathered from CompuStat for all the companies that are being observed. This leaves between 14,137 and 14,169 observations. The observations differ, because some transactions happen right in the beginning or end of the observed period, resulting in no observation of the stock return before or after the transaction.

The stock price data is linked with the transactions that happened and will be compared to the stock price at t-10, t-5, t-1, t+1, t+5 and t+10 to try and observe if there are positive

announcement effects. In this analysis t is equal to the day of the M&A announcement and the steps are days. Because the stock market is always fluctuating it is important to look at the abnormal returns, instead of the normal returns. The abnormal returns are obtained by observing the same returns as before and subtracting the return of the S&P 500 over the given period. The returns are shown in Table 4. Normal stock returns are shown in Table 12 in Appendix A.

Table 4: Descriptive statistics for abnormal stock returns after M&A transactions

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Minus 1 plus 1	14,169	.001	.034	-.336	1.970
Minus 1 plus 5	14,169	.001	.048	-.549	1.883
Minus 1 plus 10	14,154	.001	.062	-.867	1.876
Minus 5 plus 1	14,161	.002	.052	-.651	1.991
Minus 5 plus 5	14,161	.001	.060	-.640	1.863
Minus 5 plus 10	14,146	.002	.072	-.884	1.855
Minus 10 plus 1	14,152	.002	.062	-.649	1.929
Minus 10 plus 5	14,152	.002	.071	-.638	1.844
Minus 10 plus 10	14,137	.002	.083	-.866	2.599

3.5 CEO, board, and M&A data linked

The M&A data is linked to the CEO data from the years that M&A transactions were announced, of the 15,601 observations there are 13,567 transactions of which there is CEO specific data. As shown in Table 5 3.7% of the transactions were performed by CEOs who were twelve during a recession year and 9.6% of the transactions were performed by CEOs who were eighteen during a recession.

Table 5: Descriptive statistics for recession experience in deals happened

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Recession 12	13,567	.037	.190	0	1
Recession 13	13,567	.061	.239	0	1
Recession 14	13,567	.068	.253	0	1
Recession 15	13,567	.053	.224	0	1
Recession 16	13,567	.081	.273	0	1
Recession 17	13,567	.082	.275	0	1
Recession 18	13,567	.096	.295	0	1

When CEOs who were twelve years old during a recession are observed, the average stake acquired is 89.510, compared to 92.208 for CEOs who were not in a recession when they were twelve. The transaction size is quite similar: 1,313.601 for CEOs who were born during a recession, and 1,327.48 for CEOs not born during a recession.

Furthermore, the descriptives of CEOs who experienced a recession when they were eighteen years old are examined. Here there is a different effect than for CEOs who were twelve when they experienced a recession. The average stake acquired is 96.161, compared to 91.670 for CEOs who did not experience a recession when they were eighteen. The transaction size also differs: 949.383 for CEOs who experienced a recession when eighteen, and 1,367.29 for CEOs who did not experience a recession at age eighteen.

The data about board members excluding CEOs is also linked to the M&A data, leaving 14,345 transactions for which there is data about the board members. The mean of the observations is consistently higher than the observations for CEOs, meaning that board members involved in M&A transactions have more often experienced a recession when growing up. 7.4% of the transactions is performed by board members who experienced a recession when they were twelve. For CEOs, this percentage is only 3.7%.

In Table 6 the recession experienced over deals happened for board members is shown. The means are higher than Table 5, this can be explained because in the entire sample the average board member was more likely to have experienced a recession than the CEOs as shown in Table 1 and 2.

Table 6: Descriptive statistics for recession experience in deals happened for board members

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Board recession 12	14,345	.074	.139	0	.75
Board recession 13	14,345	.080	.147	0	1
Board recession 14	14,345	.083	.152	0	1
Board recession 15	14,345	.109	.173	0	1
Board recession 16	14,345	.101	.163	0	1
Board recession 17	14,345	.098	.161	0	1
Board recession 18	14,345	.099	.161	0	1

4 Methodology

To analyze the effect of growing up during a recession on the M&A transactions that a CEO performs, a linear regression will be performed with *percent acquired* as dependent variable and *CEOs growing up during a recession at a certain age* as independent variable. Growing up during a recession will be examined as the ages twelve until eighteen during a recession. This period is chosen because when the child reaches the age of twelve, children leave middle school, and therefore become more educated and more aware of their surroundings. This is supported by findings in the paper by Webley (2005), who argues that making budgetary choices with allowance, and getting taught economic theories improves the economic understanding of a child. The age of eighteen as maximum is used because that is when most children leave high school. Besides that, it is the age when children are considered adolescent.

To make sure the differences encountered in transaction stake acquired are robustly attributable to recession experience, the following control variables will be added: *transaction size, relation between firm and acquired firm fixed effects, sector fixed effects, year fixed effects, CEO gender* and lastly *CEO age*. As observed in the previous chapter, the transaction size can differ quite a lot per transaction. Because the regression focusses on transaction stake, transaction size is included as control variable. The variable will be a natural logarithm of transaction size because transaction size is not normally distributed. Secondly, the type of relationship between the target and the acquirer is added as a control variable. This is due to the fact that a current subsidiary will most likely receive a different investment than a prior subsidiary. Thirdly, sector will be added as a control variable, because as observed in the previous chapter the stakes obtained per transaction differ quite a lot per sector. Fourthly, yearly effects can have implications on the results as well, because the sample includes different economic cycles, therefore yearly fixed effects will be added as a control variable. Fifthly, the board data are included as variables as well, to see if they change the CEO coefficients. After that, the gender of the CEO is included as a control variable, as theory has shown that male CEOs tend to be more risk-taking (Gustafson, 1998; Croson and Gneezy, 2009; Charness and Gneezy, 2012). Lastly, the control variable for age during the M&A transaction is added, because it follows from theory that people become more risk averse when they become older (Vroom and Pahl, 1971)

Because the residuals could be clustered, standard errors that are robust to heteroskedasticity are used in all regression models. To check if the standard errors are clustered by firm, the full

regressions with all control variables are also performed with standard errors that are clustered by firm.

The previously described regression model focusses on the effect on the stake acquired, therefore the exact same regressions will also be performed on a binary variable that is 1 when there is a minority transaction. Furthermore, to analyze if growing up during a recession has an impact on the profitability of M&A transactions, regressions are performed on stock returns over different time intervals before and after the announcement, with the explanatory variables being the same as in the previous regression models. *Stock return* is measured in different ways: return from t-1 until t+1, t-1 until t+5, t-1 until t+10, t-5 until t+1, t-5 until t+5, t-5 until t+10, t-10 until t+1, t-10 until t+5, t-10 until t+10. T marks the day of the announcement of the M&A transaction, multiple windows are used, because sometimes the effect will be seen very quickly, and sometimes it will take longer.

5 Results

5.1 CEO and board regressions

To test Hypothesis 1: *CEOs who grew up during a recession exhibit more risk-seeking financial policy and are less likely to pursue a minority investment* multiple regressions will be performed with as independent variable a dummy variable that is one if the CEO experienced a recession at that age and as dependent variable the percentage acquired. Following from Smit and Kil (2011) risk-seeking behavior can be observed if the CEO obtains a high stake or abstains from minority stakes. Following Bernile et al. (2017) experiencing mild disasters can cause agents to become more risk-seeking.

In Table 7 the regression results of *percent acquired* on *CEOs growing up during a recession at a certain age* are shown. In this simple regression the ages twelve until eighteen are included. Besides that, multiple control variables are added in every regression. In the most basic regression with just recession experienced at the ages twelve until eighteen there are significant coefficients for all ages except for twelve, with the lowest being 2.631*** at age sixteen and the highest being 5.985*** at age eighteen. This would mean that CEOs who experienced a recession when they were eighteen obtain stakes that are 5.985% bigger than CEOs who did not experience a recession at the age of eighteen, all other variables staying constant. The results remain when different control variables are added, as the coefficients are still highly significant and positive, except for the age of twelve. The fact that the coefficient for *Recession 12* is negative does not raise any concerns as it is not significant in most of the regressions. The coefficient for recession 18 is 3.244***, implying that CEOs who experienced a recession at the age of 18 acquire stakes 3.244% bigger than CEOs who did not experience a recession at the age of eighteen. The R^2 for the regression including all control variables in regression (7) is 0.414, which is moderate and means that the regression variables have some explanatory power.

The fact that the significant coefficients are positive for all coefficients confirms Hypothesis 1: *CEOs who grew up during a recession exhibit more risk-seeking financial policy and are less likely to pursue a minority investment.* The obtained results are therefore also more in line with Bernile et al. (2017), who explain how experiencing mild disasters can lead to risk-seeking behavior in favor of other research into recession CEOs, which finds more risk averse behavior after experiencing negative experiences. One of the reasons this might be the case is because Malmendier et al. (2011) researched the influence of the Great Depression on CEOs. The Great Depression lasted longer and was more negative in magnitude than previous recessions.

To make sure the results are robust, regression (7) is observed for main results, as this regression includes a control variable for the natural logarithm of transaction size, company relation type, sector fixed effects, year fixed effects, CEO gender and CEO age during the deal. The coefficient for natural logarithm of transaction size is -0.791***, which implies that there is a negative relation between the transaction size and the percentage acquired. The coefficient for the gender of the CEO is 0.371, which is insignificant, and therefore in line with theory that male CEOs are more risk-seeking (Gustafson, 1998; Croson and Gneezy, 2009; Charness and Gneezy, 2012). The coefficient for age during the deal is -0.107**, which is small but in line with Vroom and Pahl (1971) who argue that CEOs become more risk averse when they get older.

To test Hypothesis 2: *If a higher percentage of the board grew up during a recession, the company will not be more likely to pursue a minority investment* regression (7) in Table 7 is performed again, but now board data is added. These are averages for the board of a company of binary variables that are one if a board member experienced a recession at that age. Following Akbar et al. (2017) and Watson et al. (1993) the expectation is that more recession experience on the board will lead to more risk-seeking behavior in M&A deals.

When the variable for board members growing up during a recession is added in regression (8), the coefficients appear different in magnitude and sign than the previously obtained coefficients for CEOs growing up during a recession. Most of the coefficients for *Board recession* are positive and insignificant. For the age of eighteen the coefficient is significant and negative, it should however be noted that the R^2 drops from regression (7) to (8), which would mean that although the effects are significant, they cause the regression to have less explanatory power, in this case because there is also a drop in observations.

Because most of the coefficients are positive, Hypothesis 2: *If a higher percentage of the board grew up during a recession, the company will be less likely to pursue a minority investment* is confirmed. This is in line with the argument that the diversity of backgrounds and opinions of board members only applies if they in fact have different experiences.

To ensure robustness of the found results, this regression also includes the same control variables as regression (7). Besides that, it added board gender. The effect of transaction size has now dropped from -.0.791*** to -0.079. The effect of CEO gender has changed to 1.413, which is still insignificant and positive. The effect of the age of the CEO during the transaction has changed to -0.071, which is now insignificant. The sign however is still in line with theory,

implying that older people become more risk averse. The coefficient for board gender is 5.001**, which implies that a male board acquires significantly larger stakes than a female board.

To further test whether the results are robust, regressions (7) and (8) are performed again, now with company clustered standard errors. This reduces the significance of the previously obtained coefficients. If the dependent variable is changed to *minority stake* instead of percentage acquired, the results are very similar. The coefficients are negative and highly significant, except for the age of twelve. The fact that they are positive again indicates that experiencing a recession during a certain year in a CEOs youth declines the chance of a minority investment. In the most basic regression, a coefficient of -0.063*** is obtained for CEOs who experienced a recession at age eighteen. This means that a CEO who experienced a recession at age eighteen is 6.3% less likely to obtain a minority stake. When control variables are added, the coefficients remain significant and positive, except for the age of twelve. These additional regressions can be found in Appendix B.

Lastly, to assess whether Hypothesis 1 holds, an F-test is performed after regression (7) to jointly test whether all coefficients of *CEOs growing up during a recession at a certain age* are different from 0. A test statistic with a P-value of 0.000 is found, meaning that the null hypothesis that all coefficients are zero is being rejected. The full results of the F-test, with the obtained statistic, probability and distribution can be found in Table 16 in Appendix B. For Hypothesis 2 the same F test is also performed after regression (8) to test whether all coefficients of *Board members growing up during a recession at a certain age* are different from 0. A test statistic with a P-value of 0.000 is obtained, meaning that the null hypothesis that all coefficients are zero is also rejected in this case.

Table 7: OLS regression results on percent acquired

	(1) *Percent*	(2) *Percent*	(3) *Percent*	(4) *Percent*	(5) *Percent*	(6) *Percent*	(7) *Percent*	(8) *Percent*
Recession 12	-.666	.168	.723	-.874	-1.405	-1.401	-2.466*	-2.889
	(1.170)	(1.563)	(1.461)	(1.339)	(1.369)	(1.369)	(1.437)	(1.909)
Recession 13	3.824***	5.586***	14.272***	4.129***	3.774***	3.774***	2.766***	1.226
	(.723)	(.944)	(1.074)	(.934)	(.972)	(.972)	(1.028)	(1.211)
Recession 14	3.955***	5.923***	6.370***	3.488***	2.904**	2.900**	2.027*	3.084**
	(.733)	(1.014)	(.986)	(1.091)	(1.146)	(1.146)	(1.190)	(1.383)
Recession 15	5.017***	6.476***	3.855***	3.204***	2.646***	2.656***	1.794*	1.829*
	(.750)	(1.188)	(1.093)	(.898)	(.927)	(.928)	(.975)	(1.071)
Recession 16	2.631***	4.425***	5.675***	2.127***	1.539*	1.544*	.707	-1.607
	(.730)	(.969)	(.916)	(.817)	(.844)	(.843)	(.909)	(1.036)
Recession 17	4.521***	5.785***	7.768***	2.881***	2.383***	2.377***	1.586*	.416
	(.637)	(.893)	(.835)	(.711)	(.760)	(.761)	(.816)	(.990)
Recession 18	5.985***	7.018***	10.678***	4.317***	3.961***	3.960***	3.244***	.936
	(.542)	(.802)	(.885)	(.722)	(.733)	(.734)	(.773)	(.919)
Board recession 12								7.968***
								(1.870)
Board recession 13								1.587
								(1.891)
Board recession 14								2.904
								(1.826)
Board recession 15								3.089**
								(1.432)
Board recession 16								5.054***
								(1.613)
Board recession 17								.863
								(1.636)
Board recession 18								-2.908*
								(1.648)
Ln(Transaction size)		-1.838***	-1.816***	-.771***	-.807***	-.806***	-.791***	-.079
		(.162)	(.138)	(.119)	(.119)	(.119)	(.119)	(.135)
Relation FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	No	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes	Yes
CEO gender						.285	.371	1.413
						(1.595)	(1.595)	(1.867)
Age during transaction							-.107**	-.071
							(.045)	(.054)
Board gender								5.001**
								(2.353)
Constant	90.176***	96.419***	86.034***	53.751***	52.332***	52.038***	57.802***	44.974***
	(.313)	(.764)	(1.185)	(1.994)	(2.319)	(2.915)	(3.894)	(5.012)
R^2	0.011	0.039	0.235	0.412	0.414	0.414	0.414	0.340
Observations	12,371	7,487	7,487	7,487	7,487	7,487	7,487	5,856

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.2 Performance regressions

To test Hypothesis 3: *Growing up during a recession does not lead to market-outperformance of announcement returns of M&A transactions* a regression is performed of *announcement returns* on *CEOs growing up during a recession at a certain age.* This regression will measure the effects of the binary variable being one, meaning that a CEO experienced a recession at a certain age, on announcement returns over different timeframes. In line with Malmendier and Tate (2008b), the expectation is that risk-seeking behavior will cause returns to underperform the market.

In Table 8, the effect on profitability is examined in the form of a regression model on the dependent variable *stock return* over different time intervals. Abnormal stock returns are used, because those returns exhibit a better possible consequence of the M&A transaction than the normal return.

As observed, the regressions show few significant coefficients, indicating that percent acquired or experiencing a recession at a certain age does not significantly cause M&A transactions to be either more valuable or value destroying. Besides that, the regressions show a low R^2 implying that the coefficients have low explanatory power.

For the age of thirteen the coefficients are most often significant and positive, meaning that experiencing a recession at the age of thirteen positively impacts the stock returns of the company involved in the M&A transaction.

This means that Hypothesis 3: *Growing up during a recession does not lead to market-outperformance of announcement returns of M&A transactions* can not be confirmed. Firstly, because most of the results are insignificant. Secondly, because the obtained coefficients are mostly positive, meaning that experience a recession does actually lead to announcement effects that outperform the market.

To make sure the obtained results are robust, the regressions all include control variables for the percentage acquired, which is zero in all regressions. There is also a control variable included for the natural logarithm of transaction size, which effect is also zero in all regressions. There is a control variable for gender, which is significant and positive in all regressions and varies between 0.006** and 0.026***. This indicates that a male CEO obtains announcement returns in the time period minus 10 until plus 10 that are 2.6% higher than the announcement

returns of a female CEO. The coefficient for the age during the M&A transaction is added and is zero in all regressions. Lastly, there are company relation type, sector and year fixed effects.

Lastly, to assess if the different coefficients for of *CEOs growing up during a recession at a certain age* have no joint significance, after every regression an F-test is performed to assess if the coefficients are different from 0. The P-values of the obtained test statistics range from 0.096 to 0.253, meaning that the null hypothesis that all coefficients are zero can not be rejected. The full results of the F-test can be found in Appendix B.

Table 8: OLS regression results on stock returns

	(1) *Minus 1 plus 1*	(2) *Minus 1 plus 5*	(3) *Minus 1 plus 10*	(4) *Minus 5 plus 1*	(5) *Minus 5 plus 5*	(6) *Minus 5 plus 10*	(7) *Minus 10 plus 1*	(8) *Minus 10 plus 5*	(9) *Minus 10 plus 10*
Percent acquired	-.000	-.000*	-.000	-.000	-.000	.000	-.000	-.000	-.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Recession 12	.004**	.003	.003	.001	.000	-.001	.005	.004	.002
	(.002)	(.003)	(.004)	(.004)	(.004)	(.005)	(.004)	(.005)	(.006)
Recession 13	.004**	.006***	.008***	.004*	.006**	.007**	.008***	.010***	.011***
	(.002)	(.002)	(.003)	(.002)	(.003)	(.003)	(.003)	(.003)	(.004)
Recession 14	.001	.000	-.002	.003	.002	-.001	.003	.002	-.002
	(.002)	(.003)	(.004)	(.002)	(.003)	(.004)	(.003)	(.004)	(.004)
Recession 15	.002	.003	.001	.008**	.008**	.008*	.004	.004	.004
	(.002)	(.003)	(.004)	(.003)	(.004)	(.004)	(.004)	(.004)	(.005)
Recession 16	.003**	.006***	.002	.004*	.007**	.004	.005	.008**	.005
	(.002)	(.002)	(.003)	(.002)	(.003)	(.003)	(.003)	(.003)	(.004)
Recession 17	.002	.005*	.005	.001	.004	.004	.002	.006	.005
	(.002)	(.002)	(.003)	(.002)	(.003)	(.004)	(.003)	(.004)	(.005)
Recession 18	.003**	.004*	.005	.001	.002	.003	.003	.004	.004
	(.001)	(.002)	(.003)	(.002)	(.002)	(.003)	(.003)	(.003)	(.004)
Ln (Transaction size)	-.000*	-.000	-.000	-.000	.000	-.000	-.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.001)
Company relation type FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender	.006**	.011***	.015**	.014**	.019**	.023**	.016***	.022***	.026***
	(.003)	(.004)	(.006)	* (.004)	* (.005)	* (.006)	(.004)	(.005)	(.006)
Age during M&A transaction	.000	.000	.000	.000	.000	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Constant	.006	.008	.005	-.001	-.005	.013	-.014	-.017	-.016
	(.005)	(.007)	(.009)	(.013)	(.014)	(.011)	(.012)	(.014)	(.017)
R^2	0.011	0.011	0.012	0.014	0.015	0.014	0.009	0.009	0.009
Observations	7,069	7,069	7,068	7,066	7,066	7,065	7,064	7,064	7,063

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

6 Conclusion and discussion

Belief distortions in CEO behavior have long been known to influence their decision-making process. CEOs who grew up during the Great Depression exhibit significantly more financially conservative behavior than their peers and CEOs who started their career during a recession spend relatively less on R&D and abstain from using external financing (Malmendier et al., 2011; Schoar and Zuo, 2017). There is also a theory arguing that experiencing disasters lead to an inverse U curve in risk-taking by CEOs, with the threshold at the point where it has extreme negative consequences (Bernile et al., 2017). This framework would mean that there are two sides to negative experiences.

This thesis contributes to the exiting literature by researching the effect of growing up during a recession on risk-seeking behavior in M&A transactions. Risk-seeking behavior has been defined as obtaining a bigger share of the target company. The results show that CEOs growing up during a recession are more likely to obtain a bigger share in an M&A transaction, and therefore showing more risk-seeking behavior. This confirms the Hypothesis 1: *CEOs who grew up during a recession exhibit more risk-seeking financial policy and are less likely to pursue a minority investment* and is in line with the observed inverse U curve in risk-taking by CEOs (Bernile et al., 2017). A board that has more recession experience exhibits the same positive effects on the percentage acquired. This means that a shared experience strengthens the belief distortion. This confirms Hypothesis 2: *If a higher percentage of the board grew up during a recession, the company will be less likely to pursue a minority investment*. This can be attributed to the fact that the diversity of opinions in a board only comes into effect when the board members differ in experiences. To test the robustness of both results, both findings are also tested with control variables and the findings still stand. The effects of growing up during a recession do not negatively affect the share price of the company, in contrast it appears to show small positive announcement effects. Therefore Hypothesis 3: *Growing up during a recession does not lead to market-outperformance of announcement returns of M&A transactions* is rejected. This answers the research question: *Does growing up during a global recession cause CEOs to act more risk-seeking in US M&A transactions?* affirmative, as two of the hypotheses have been accepted. These findings imply that a CEO who experienced a recession while growing up will be more risk-seeking. Now that this is known, CEOs themselves and their environment can take this into account during M&A transactions.

It should be noted that the effect of global recessions on future CEOs could be smaller than on other people as CEOs typically come from a wealthy family, which indicates that a child might not notice the impact of a recession. Secondly, this research focusses on US M&A transactions performed by S&P 500 companies. It is unclear if this finding is valid in another setting. The use of an OLS regression on the dependent variable *percent acquired* is also something that could be changed into a different type of regression in further research, given the fact that the dependent variable is bounded. Besides that, it should be taken into account that announcement returns is just one way of measuring the effect of an M&A transaction, which mainly focusses on the reaction of the market. It could be that the market positively reacts to M&A transactions by recession CEOs, but that the transactions are still not value-creating. Both these factors can be taken into account in further research.

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Appendix A

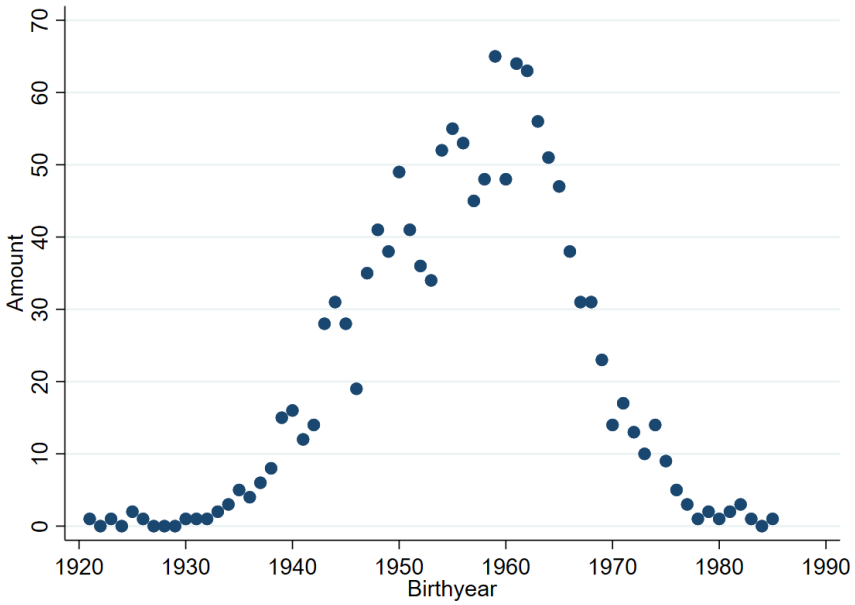

Figure 4: CEO per birthyear

Table 9: Which recessions are reflected in experienced data

	(1) *1929*	(2) *1930*	(3) *1931*	(4) *1932*	(5) *1975*	(6) 1982	(7) 1991	(8) 2009	(9) 2020
CEO 12	0	0	0	0	2928	1272	156	0	0
CEO 13	0	0	0	0	414	91	1	0	0
CEO 14	0	0	0	0	503	130	8	0	0
CEO 15	0	0	0	0	362	174	14	0	0
CEO 16	0	0	0	0	508	193	30	0	0
CEO 17	0	0	0	0	389	303	49	0	0
CEO 18	0	0	0	0	379	310	50	0	0
Board 12	3	0	0	0	2410	1002	103	0	0
Board 13	0	3	0	0	2748	1239	143	0	0
Board 14	0	0	3	0	2679	1551	247	0	0
Board 15	0	0	0	3	2675	1643	228	0	0
Board 16	0	0	0	0	2596	1867	360	0	0
Board 17	0	0	0	0	2249	2117	498	0	0
Board 18	0	0	0	0	2161	2300	643	0	0

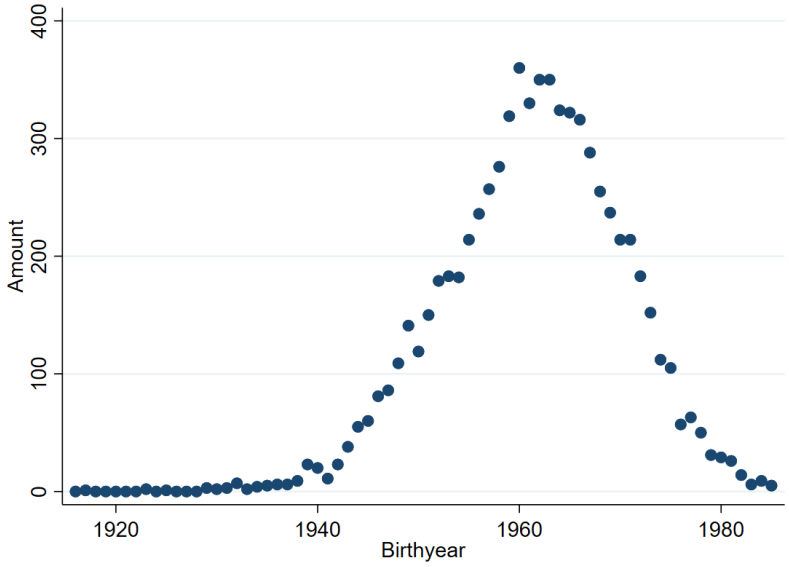

Figure 5: Board member per birthyear

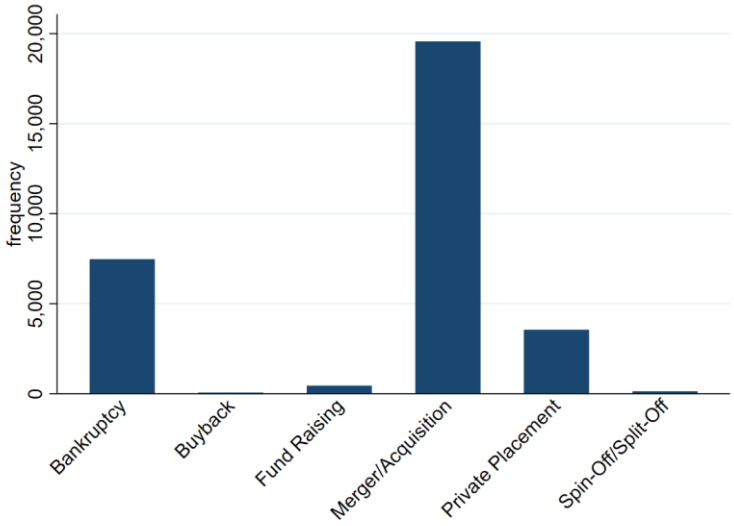

Figure 6: type of transactions

Table 10: Descriptive statistics for recessions at age 12

	(1) *Percent acquired*	(2) *Transaction size*
0	92.208	1327.48
1	89.510	1313.601
Total	92.108	1326.913

Table 11: Descriptive statistics for recessions at age 18

	(1) *Percent acquired*	(2) *Transaction size*
0	91.670	1367.29
1	96.161	949.383
Total	92.108	1326.913

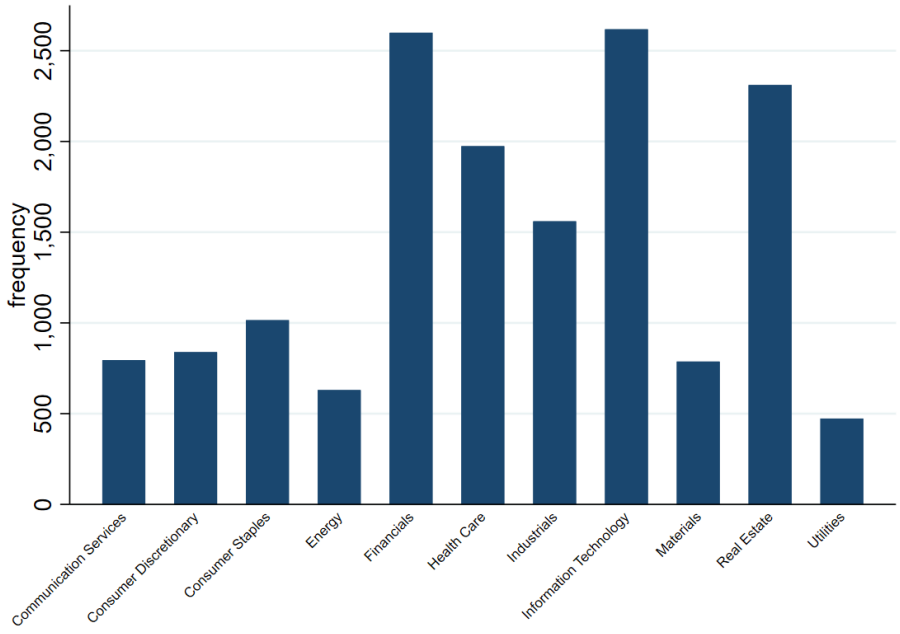

Figure 7: Transactions per sector

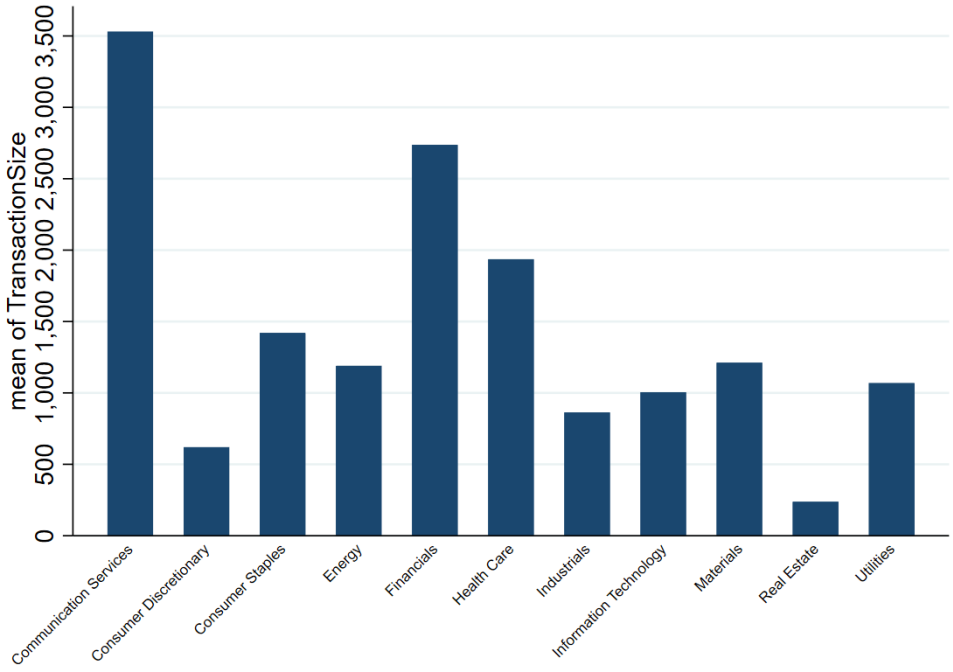

Figure 8: Transaction size per sector

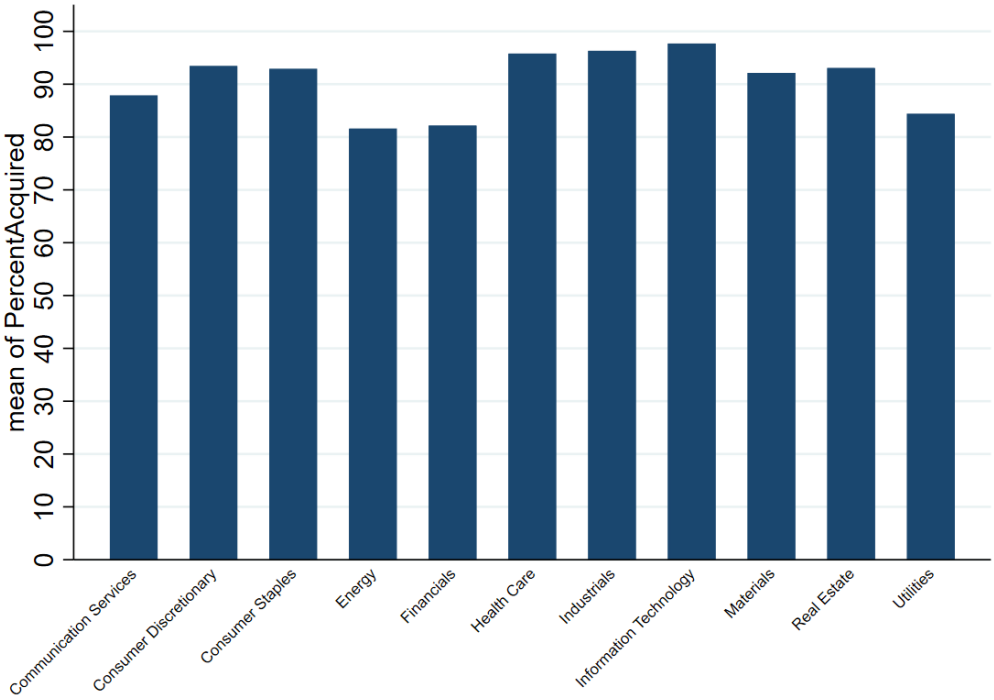

Figure 9: Percent acquired per sector

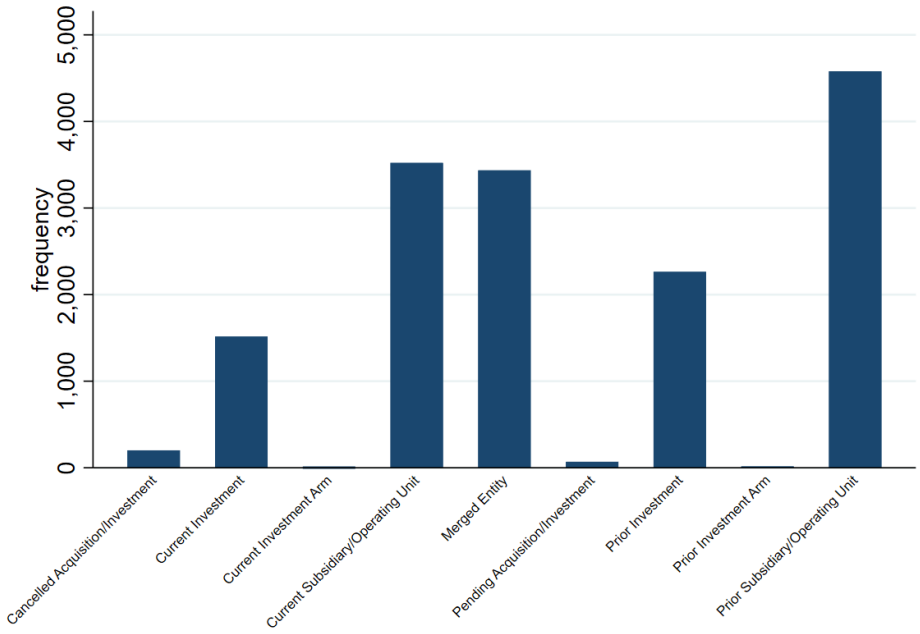

Figure 10: Relations between acquirer and target

Table 12: Descriptive statistics for stock returns after M&A transactions

	(1) *Observations*	(2) *Mean*	(3) *Standard deviation*	(4) *Min*	(5) *Max*
Minus 1 plus 1	14,169	.002	.038	-.392	1.978
Minus 1 plus 5	14,169	.002	.055	-.552	1.868
Minus 1 plus 10	14,154	.004	.070	-.850	1.877
Minus 5 plus 1	14,161	.004	.059	-.675	2.040
Minus 5 plus 5	14,161	.004	.069	-.684	1.884
Minus 5 plus 10	14,146	.006	.083	-.845	1.893
Minus 10 plus 1	14,152	.006	.071	-.662	1.951
Minus 10 plus 5	14,152	.006	.082	-.672	1.841
Minus 10 plus 10	14,137	.007	.095	-.842	2.644

Appendix B

Table 13: OLS regression results on percent acquired

	(1) *Percent acquired*	(2) *Percent acquired*	(3) *Percent acquired*	(4) *Percent acquired*	(5) *Percent acquired*	(6) *Percent acquired*	(7) *Percent acquired*
Recession 12	-4.027**						
	(1.345)						
Recession 13		1.576*					
		(.896)					
Recession 14			.939				
			(1.073)				
Recession 15				.806			
				(.894)			
Recession 16					-.541		
					(.797)		
Recession 17						.442	
						(.681)	
Recession 18							2.414***
							(.673)
Ln (Transaction size)	-.794***	-.799***	-.793***	-.792***	-.793***	-.793***	-.792***
	(.119)	(.120)	(.119)	(.119)	(.120)	(.120)	(.119)
Company relation type FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender	.504	.577	.532	.621	.550	.541	.533
	(1.583)	(1.588)	(1.584)	(1.589)	(1.586)	(1.584)	(1.592)
Age during M&A transaction	-.186***	-.152***	-.158***	-.160***	-.167***	-.161***	-.150***
	(.040)	(.039)	(.039)	(.039)	(.040)	(.039)	(.039)
Constant	61.894***	59.935***	60.330***	60.283***	60.780***	60.422***	59.838***
	(3.712)	(3.672)	(3.669)	(3.701)	(3.705)	(3.686)	(3.680)
R^2	0.413	0.412	0.412	0.412	0.412	0.412	0.412
Observations	7,487	7,487	7,487	7,487	7,487	7,487	7,487

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 14: OLS regression results on percent acquired (company ID clustered standard errors)

	(1) *Percent acquired*	(2) *Percent acquired*
Recession 12	-2.466	-2.889
	(2.654)	(3.048)
Recession 13	2.766	1.226
	(2.502)	(2.004)
Recession 14	2.027	3.084
	(4.105)	(3.119)
Recession 15	1.794	1.829
	(1.659)	(1.327)
Recession 16	.707	-1.607
	(1.427)	(1.195)
Recession 17	1.586	.416
	(1.504)	(1.412)
Recession 18	3.244*	.936
	(1.818)	(1.409)
Board recession 12		7.968***
		(2.681)
Board recession 13		1.587
		(2.378)
Board recession 14		2.904
		(2.191)
Board recession 15		3.089
		(2.131)
Board recession 16		5.054**
		(2.021)
Board recession 17		.863
		(2.081)
Board recession 18		-2.908
		(2.480)
Ln (Transaction size)	-.791***	-.079
	(.510)	(.185)
Company relation type FE	Yes	Yes
Sector FE	Yes	Yes
Year FE	Yes	Yes
CEO gender	.371	1.413
	(1.782)	(1.744)
Age during M&A transaction	-.107**	-.071
	(.047)	(.054)
Board gender		5.001**
		(2.959)
Constant	57.802***	44.974***
	(6.415)	(6.849)
R^2	0.414	0.340
Observations	7,487	5,856

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 15: OLS regression results on minority stake

	(1) *Minority stake*	(2) *Minority stake*	(3) *Minority stake*	(4) *Minority stake*	(5) *Minority stake*	(6) *Minority stake*	(7) *Minority stake*
Recession 12	.011	.004	-.002	.016	.020	.020	.032*
	(.015)	(.020)	(.020)	(.018)	(.018)	(.018)	(.019)
Recession 13	-.044***	-.061***	-.163***	-.046***	-.044***	-.043***	-.031**
	(.009)	(.011)	(.013)	(.011)	(.012)	(.012)	(.012)
Recession 14	-.043***	-.060***	-.066***	-.034***	-.030**	-.030**	-.020
	(.008)	(.012)	(.012)	(.013)	(.013)	(.014)	(.014)
Recession 15	-.055***	-.065***	-.033**	-.024**	-.020*	-.021*	-.011
	(.008)	(.014)	(.013)	(.011)	(.011)	(.011)	(.012)
Recession 16	-.027***	-.046***	-.059***	-.016*	-.011	-.011	-.001
	(.009)	(.012)	(.011)	(.010)	(.010)	(.010)	(.011)
Recession 17	-.048***	-.060***	-.083***	-.028***	-.025***	-.024***	-.015
	(.007)	(.011)	(.010)	(.009)	(.009)	(.009)	(.010)
Recession 18	-.063***	-.077***	-.119***	-.047***	-.044***	-.044***	.036***
	(.006)	(.009)	(.010)	(.009)	(.008)	(.008)	(.009)
Ln (Transaction size)		.020***	.020***	.008***	.007***	.007***	.008***
		(.002)	(.002)	(.001)	(.001)	(.001)	(.001)
Company relation type FE	No	No	Yes	Yes	Yes	Yes	Yes
Sector FE	No	No	No	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes
Gender						-.016	-.017
						(.021)	(.021)
Age during M&A transaction							.001**
							(.001)
Constant	.094***	.025***	.140***	.528***	.542***	.558***	.491***
	(.004)	(.009)	(.015)	(.025)	(.029)	(.037)	(.049)
R^2	0.009	0.033	0.225	0.394	0.395	0.396	0.396
Observations	12,371	7,487	7,487	7,487	7,487	7,487	7,487

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 16: F-tests on joint significance for multiple regressions

	(1) *Statistic*	(2) *Probability*	(3) *Distribution*
CEO recession experiences all ages on percent acquired	4.26***	0.000	(7, 7433)
Board recession experiences all ages on percent acquired	5.15***	0.000	(7, 5799)
CEO recession experiences all ages on minus 1 plus 1	1.33	0.231	(7, 7019)
CEO recession experiences all ages on minus 1 plus 5	1.73*	0.096	(7, 7019)
CEO recession experiences all ages on minus 1 plus 10	1.41	0.195	(7, 7018)
CEO recession experiences all ages on minus 5 plus 1	1.29	0.253	(7, 7016)
CEO recession experiences all ages on minus 5 plus 5	1.64	0.120	(7, 7016)
CEO recession experiences all ages on minus 5 plus 10	1.31	0.242	(7, 7015)
CEO recession experiences all ages on minus 10 plus 1	1.30	0.246	(7, 7014)
CEO recession experiences all ages on minus 10 plus 5	1.68	0.109	(7, 7014)
CEO recession experiences all ages on minus 10 plus 10	1.58	0.136	(7, 7013)

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1