Norwegian School of Economics

Bergen, Fall 2016

What determines the personal costs of bankruptcy for CEOs?

An empirical study on the personal costs of bankruptcy for CEOs in Norway

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Master Thesis in Financial Economics

NORWEGIAN SCHOOL OF ECONOMICS

Preface

This master thesis was written to conclude the Master of Science in Finance at the Norwegian School of Economics during the fall of 2016. We have analyzed chief executive officer ("CEO") personal costs of bankruptcy in Norway. The sample we are studying comprises CEOs for Norwegian firms that were declared bankrupt between 2009 and 2013. The topic is related to finance, but is also applicable to other fields such as management and in particular corporate governance.

The paper has been prepared in Microsoft Word. The analysis of data material has been conducted in Microsoft Excel, Stata and Gretl. Further, tables and graphical illustrations are prepared in Microsoft Excel and Stata. The foremost statistical concepts applied comprises logistic regression, Ordinary least-square regression, T-test and Wilcoxon rank-sum test. We have obtained data from the Brønnøysund Register Centre, the Norwegian tax rolls, social media and various web sources.

We owe our thanks to people helping us in the preparation of our thesis. Firstly, our supervisor, Karin Thorburn, has provided excellent guidance and input throughout the process. Karin´s experience and knowledge has been of outmost importance to the final result. Further, we are grateful for the data foundation provided to us by The Brønnøysund Register Centre and the effort put down by Sofia Bergstrøm. Also, we would like to thank Kristoffer Hegdahl at Thomessen for giving us an introduction to Norwegian bankruptcy legislation. He has helped us to better understand the bankruptcy process.

Bergen, December 2016

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Executive summary

This thesis is a study of personal costs of bankruptcy for CEOs in Norway. If these costs are substantial, they can incentivize CEOs to hedge against bankruptcy. The practical implications can be severe for the firms' different stakeholders. We study a sample of 1,446 CEOs in 1,023 Norwegian firms declared bankrupt between 2009 and 2013. The thesis comprises four main analyses examining personal costs in various forms: First, CEO replacement incurs a personal cost in terms of reputational damage. As such, we analyze determinants of CEOs´ replacements prior to bankruptcy. Second, those not attaining a new CEO position after bankruptcy suffer costs in terms of lower status. Therefore, we address the employment changes for our sample CEOs. Third, we address the compensation loss imposed on the CEOs prior to bankruptcy. Fourth, we investigate compensation loss for CEOs that occurs after the bankruptcy. These analyses are intended to give a profound understanding of how CEOs in Norway are affected by bankruptcy.

We argue that the sum of CEOs´ personal costs of bankruptcy in Norway are sparse. Consequently, we find no evidence to support the existence of CEO hedging behavior in Norway. Compared with previous research, we find a relatively small share of CEOs being replaced prior to bankruptcy (14% annually). Further, we observe a marginal reduction of NOK 50 thousand in compensation prior to bankruptcy. In addition, we find a compensation loss after bankruptcy for those not finding new employment as CEOs, but it only amounts to NOK 536 thousand over their lifetime. However, we find that only a relatively small fraction of our sample attains a new CEO position after bankruptcy (20%).

This thesis complements other research in Sweden and the U.S. on the same issue. Notably, it is the first examination of Norwegian bankruptcies (and legislation). Under Norwegian legislation, all bankrupt companies cease to exist. In both Sweden and the U.S. however, firms can continue as a going-concern and sustain their business. Moreover, most larger restructurings in Norway are settled in out-of-court negotiations and not registered, resulting in a sample mostly consisting of small firms. These distinctions can also explain differences in results between our study and previous research.

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1. Definitions

As our thesis contains many difficult expressions, we define central concepts in this chapter. They are listed in an alphabetic order.

Bankruptcy - Corporate bankruptcy is referred to as only "Bankruptcy" throughout this paper.

Bankruptcy (Norwegian legislation) - A firm can be declared bankrupt by stakeholders when its debt exceeds its assets and liquidity is insufficient. All Norwegian bankruptcy proceedings entail liquidation of assets and cessation of the business.

Cash - Cash and short-term investment over total assets.

CEO - Chief executive officer.

CEO turnover - A measure to which extent companies replace a CEO in any given year.

Chapter 11 – The bankruptcy legislation applicable in the U.S.

Compensation/Salary - A CEO´s salary compensation.

Compensation change - The difference between pre- and post-bankruptcy salaries.

Covenants - A formal debt agreement restricting certain activities for the company.

Distressed - A firm in a distressed situation is struggling with paying off its financial liabilities.

Employment post-bankruptcy - The position in which departing CEOs are employed in 2015 (after the bankruptcy).

Executive employment/position - CEO position in firms with total sales exceeding NOK 3 million.

Financial accounts/reports - All firms report financials to the Brønnøysund Register Center every year including income and balance sheets.

Going-concern - A firm operating without the threat of liquidation within the foreseeable future (often 12 months).

High-margin industries - Industries with average return on assets (ROA) above 5%.

Incumbent CEO - An incumbent CEO is hired in year -3 or before, or he is the first CEO of a new company established within the four-year time frame.

Independent/consultants - Are found in annuals (and the executive register) but a cross check of their firms show they do not match our criteria for a CEO, the firms are too small (mostly only one employee) and usually offers consulting- or contracting services. These are defined as non-executives throughout this thesis.

Industry-adjusted (SN2002) - All firms belong to an industry classification (one of 17 groups). Standard Industrial Classification of 2002 (SN2002).

Legislation – A set of laws made by a government.

Leverage - Leverage ratio, defined as total liabilities over total assets.

Liquidation - The bankrupt company's assets are confiscated, converted into monetary amounts and sold later on.

NOK – Norwegian Krona

Non-executives - Employment outcomes other than an executive position.

OLS – Ordinary least square.

Personal costs of bankruptcy – CEOs´ personal costs of bankruptcy are also referred to as just personal cost of bankruptcy throughout this thesis.

Regular employment – Non-executive employment outcome.

Replacement CEO - A replacement CEO is hired between year -3 and year 0 to replace another CEO.

ROA - Return on assets, defined as EBITDA (earnings before interest, taxes, depreciation and amortization) over total assets.

Salary (Accounts) - CEO salary obtained from firms' financial accounts. Used for pre-bankruptcy compensation.

Salary (Tax roll) - CEO salary obtained from tax rolls. Used for post-bankruptcy compensation.

Size - log of total sales.

Tangibility – Fraction of tangible assets to book assets.

Tax rolls - The foundation for calculating taxes levied upon residents. The data base is publicly available in Norway and comprises taxable assets and income.

Trade credit – Dummy that is indicating whether a company has more than two-thirds of its total liabilities as non-interest bearing debt. This is often found among firms in the retail and construction sectors and identifies firms in which unsecured creditors have a particular interest in the survival of the firm.

Year 0 - A firm has been declared bankrupt within this year.

Year -1 – One year prior to bankruptcy.

Year -2 – Two years prior to bankruptcy.

Year -3 – Three years prior to bankruptcy.

2. Introduction

Oil- and gas related industries are currently in a recession and numerous companies are under financial distress. This is particularly evident in Norway as a major oil- and gas exporter (Hungnes, Kolsrud, Nitter-Hauge, & Strøm, 2016). Consequently, we are witnessing an upsurge in bankruptcy occurrences (Statistics Norway, 2016). As such, insights on this topic is increasingly relevant for the firms' different stakeholders.

Bankruptcy can impose personal costs for the firms´ CEOs. The personal costs can occur in various forms: Replacement prior to bankruptcy incurs reputational risk for CEOs. Also, departing CEOs face a risk when seeking new employment. Failing to attain a new executive position likely results in a loss of status. Furthermore, bankruptcy can impose financial costs for CEOs. In the years leading up to bankruptcy, CEOs can face reduction in compensation as a consequence of financial distress. Moreover, personal costs can occur after bankruptcy in terms of lower compensation in new employment. These personal costs can be severe and incentivize CEOs to hedge against bankruptcy with the purpose of minimizing their private losses. By engaging in such behavior, CEOs may act at the expense of either shareholders or debtholders, depending on the state of the firm.

On the one hand, when a firm is in a steady financial state, CEOs can hedge against bankruptcy by reducing their firm´s riskiness. For instance, CEOs can maintain excessive cash holdings and thus reduce their firm´s return on assets (T. W. Bates, 2009). Also, CEOs can maintain a suboptimal debt level for their firms, thus reducing return on equity (Strebulaev & Yang, 2013). Moreover, low-risk projects can be favored at the expense of riskier projects with higher net present value ("NPV") (Eckbo & Thorburn, 2003; Eisdorfer, 2008).[1]

On the other hand, when a company is under financial distress, CEOs are likely to take on excessive risk as a last-ditch effort to escape looming bankruptcy. To some extent, increasing the riskiness of the firms can be viewed as a risk-free option for the CEO and shareholders. In these instances, CEOs act at the expense of debtholders. Jensen and

[1] Net present value is the discounted sum of all cash flows for a definite or indefinite period of time in the future. The cash flows are discounted by a rate that represents the riskiness of the cash flows.

Meckling (1976) addressed a similar issue, they found that shareholders transferred wealth from bondholders by engaging in riskier projects.

The various stakeholders (e.g. the debtholders or shareholders) can counteract executive hedging behavior when aware of its existence. For instance, the board can adjust the CEO's labor contract or the general framework for the management. Another measure is to award the CEO equity grants to align interest with equity holders. Such structures were investigated by Core and Guay. They suggested that firms set optimal equity incentives in a manner that is consistent with economic theory (Core & Guay, 1999). Moreover, debtholders can propose stricter covenants for firms in financial distress.

Research on the issue of CEOs´ personal costs of bankruptcy is sparse and mostly limited to the U.S. Gilson (1989) identified substantial personal costs of bankruptcy for CEOs, represented by a pre-bankruptcy turnover rate of approximately 50% annually. Further, he argued that these costs were sufficient to explain the observed hedging behavior. Gilson and Vetsuypens (1993) followed up with a paper in which they also investigated the compensation loss prior to bankruptcy. They found substantial financial costs and thus supported the previous conclusion inferred by Gilson (1989). Later, Eckbo, Thorburn and Wang (2016) found that two-thirds of the departing CEOs were not hired in a new executive position. These suffered a substantial post-bankruptcy compensation loss amounting to USD 7 million over their lifetime.

In Sweden, Eckbo and Thorburn (2003) also found the CEOs´ personal costs of bankruptcy to be substantial. Their sample suffered a median compensation loss of 47% relative to a control group. However, they argued that CEOs were incentivized to invest conservatively as this increased the probability of being rehired as an executive.[2] Consequently, a management-shareholder conflict occurred which eliminated the risk shifting tendencies for distressed firms.

This thesis addresses the personal costs of bankruptcy for CEOs in Norwegian firms. The sample comprises 1,446 CEOs from 1,023 firms which declared bankruptcy between 2009 and 2013. We investigate personal costs occurring both before and after the companies are

[2] In Sweden, bankrupt firms can continue as a going-concern. Followingly, the previous CEO can be rehired in the going-concern.

declared bankrupt. Both financial and non-financial costs are investigated. This thesis complements other research on the same issue in several manners: Notably, it is the first examination of Norwegian bankruptcies (and legislation). Under Norwegian legislation, all bankrupt firms cease to exist. In both Sweden and the U.S. however, a bankrupt firm can continue as a going-concern and sustain their business. Moreover, most larger restructurings in Norway are settled in out-of-court negotiations resulting in a sample of mainly small sized firms. Lastly, income inequality is low in Norway compared to the U.S. These distinctions can cause differences between results in our study and previous research.

We argue that the personal cost reflected in turnover is miniscule. The pre-bankruptcy turnover rate of 14% in our thesis was significantly lower than the 52% observed by Gilson (1989) and the 30% observed by Eckbo et al. (2016).

Further, we find that personal costs in terms of pre-bankruptcy salary reductions are small and unlikely to have significant effect on CEO behavior. Measurably, the average compensation reduction is NOK 50 thousand and only occurs in the last year before bankruptcy.

Moreover, potential financial costs for CEOs that occur after the bankruptcy are minor. It is evident that the compensation loss is the greatest for the CEOs not attaining a new CEO position and amounts to a lifetime loss of NOK 536 thousand. This is substantially lower than the corresponding USD 7 million (NOK 60 million) found by Eckbo et al. (2016).[3] Further, our full sample suffered a compensation loss of only 12% compared to 47% in Sweden (Eckbo & Thorburn 2003).

Oppositely, we find higher personal costs from status loss measured by new employment. Post-bankruptcy, only 20% are rehired as CEOs. The chance of attaining a new CEO position is lower for our sample compared to previous research (30% - 40%).[4] However, the small compensation difference between CEOs and others can result in lost incentives to pursue this career. Also, CEO status in small sized firms are arguably less important.

[3] Exchange-rate per. December 2016 of 8.50 NOK/USD. Source: Central Bank of Norway.

[4] In the U.S. study of post-bankruptcy employment by Eckbo et al. (2016), one-third maintained an executive position. This compares with Gilson's findings (1989). In the Swedish study of Eckbo and Thorburn (2003), 39% were rehired as CEO in firms sold as going-concern.

We consider the personal costs of bankruptcy for CEOs in Norway to be small in absolute terms and compared to other findings in the U.S. and Sweden. As such, we argue that CEOs have insufficient incentives to hedge against bankruptcy. The substantial differences from personal costs identified in research abroad makes it hard to draw inference from the previous research on pre-bankruptcy hedging behavior.

The remainder of this this paper is organized as follows: In the next chapter, we outline the applicable bankruptcy legislation in Norway. Next, we address relevant literature. After this, we summarize the data set and variables used. Later, in the main chapter, we outline our analyses which are structured into four separate parts: First, we address CEO personal costs in terms of turnover the three preceding years to bankruptcy. Second, we identify career changes and new employment for the sample. Third, we analyze CEOs´ salaries prior to bankruptcy. Fourth, we analyze potential financial costs for CEOs that occur after the bankruptcy. Lastly, we address weaknesses in our analyses and conclude our thesis.

3. The Norwegian bankruptcy legislation

The bankruptcy process differs substantially between the legislation in various countries. In the process of analyzing Norwegian bankrupt firms, it is necessary to study the applicable legislation in Norway. The bankruptcy process has implications for our sample characteristics and outcome of the analyses.

Norwegian bankruptcy and reorganization legislation comprises of the Debt Reorganization and Bankruptcy Act and the Creditors Recovery Act (The Norwegian Advisory Council on Bankruptcy, 2011). There are three different procedures outlined; voluntary composition, compulsory composition and bankruptcy (Sandvik, 2016). The first two procedures aim to make a settlement for debt between debtors and creditors. In the vast majority of instances (95%) these processes result in bankruptcy and are following rarely applied by companies (Hegdahl, 2016). Consequently, the most common form of restructuring insolvent firms is out-of-court settlements with the various stakeholders, particularly for larger firms. However, out-of-court processes are not registered in any official records and therefore not included in our sample. Consequently, we solely focus on the third procedure (i.e. bankruptcy).

The general premises for a bankruptcy petition is that a company is both illiquid and that its debt exceeds its assets. When commencing bankruptcy proceedings, the court appoints a trustee and in some cases a credit committee.[5] Further, the trustee is responsible for administering the practical part of the bankruptcy proceedings. Meanwhile, the court supervises the following process and administers the creditor hearing. Moreover, all Norwegian bankruptcy proceedings entail liquidation of assets and cessation of the business. Following, the Norwegian bankrupt company's assets are confiscated and converted into monetary amounts and sold later on. The different assets are divided amongst the different parties holding a claim against the bankrupt firm. Lastly, the company ceases to exist and pre-existing liabilities are eliminated. As such, emerging as a restructured firm from bankruptcy is not a possible outcome.

[5] *Trustee*: A person or firms that holds or administers property or assets for the benefit of a third party. *Committee*: A group responsible for assessing the credit standing and ability to repay debt.

4. Relevant literature

Prior to conducting our own analyses, we did a thorough assessment of previous research in respect to CEOs´ personal costs of bankruptcy. In Norway, such research is non-existing per our knowledge. However, similar research exists in the U.S. and Sweden (Gilson, 1989; Gilson & Vetsuypens, 1993; Hotchkiss, 1995; Eckbo & Thorburn, 2003; Eckbo, Thorburn, & Wang, 2016). Preferably, we would study papers including both pre- and post-bankruptcy analyses. However, research in regards to CEOs after bankruptcy is sparse. Therefore, we also assessed research on personal costs only before bankruptcy.

4.1 Research emphasizing pre-bankruptcy outcomes

4.1.1 Management turnover and financial distress (1989)

One of the first papers investigating the issue of CEO personal costs of bankruptcy is written by Gilson (1989). He addressed turnover for senior management in financially distressed firms. The turnover was intented to proxy CEOs' personal costs of bankruptcy. His sample comprised of U.S. firms that defaulted on their debt, went bankrupt or restructured their debt privately. All the sample firms were publicly traded and suffered a severe stock price decline between 1979 and 1984.

Gilson (1989) found that the sample firms had a yearly turnover rate of 52%. In comparison, a control group of non-distressed firms had a turnover rate of 19%. Further he identified that a significant amount (21%) of the turnovers were initiated by the firms' creditors. Also, it was evident that the departing CEOs spent at least three years to regain a senior management position in a publicly traded firm. Hence, CEOs' personal costs were found to be severe when departing from a financially distressed firm. Gilson (1989) argued that these personal costs were significant and sufficient to explain observed heding behavior.

4.1.2 CEO compensation in financially distressed firms: an empirical analysis (1993)

After the first paper, Gilson with Vetsuypens (1993) followed up with a paper addressing characteristics of CEOs' compensation in financially distressed firms in addition to turnover. More specifically they investigated the difference in compensation for newly appointed CEOs and their predecessors. As such, they measured personal costs of bankruptcy in terms of turnover and CEOs´ reduction in compensation prior to filing. The sample comprise 77

publicly traded firms in the U.S. that either filed for bankruptcy or restructured their debt privately in the period 1981 to 1987.

In conclusion, Gilson and Vetsuypens (1993) found that the personal costs of bankruptcy were substantial. This is evident from one-third of the CEOs being replaced prior to bankruptcy. In addition, the two-thirds that were not replaced suffered a substantial reduction in salary and bonuses before bankruptcy. Further, newly appointed CEOs with connections to management were payed 35% less than their predecessors. While externally hired CEOs were payed 36% more than their predecessors. In addition, CEOs hired externally were granted substantial amounts of stock options. Also, it was evident that the compensation policy was an important part of firms' strategy in dealing with financial distress. Similar to Gilson (1989), this study is sparse on personal costs that occur after the bankruptcy.

4.2 Research including post-bankruptcy outcomes

Research on post-bankruptcy implications for CEOs is limited. Amongst the most admissible ones are Hotchkiss (1995), Eckbo and Thorburn (2003) and Eckbo et al. (2016). These papers are all investigating the post-bankruptcy situation, amongst other issues. Assessing these papers in conjunction with Gilson (1989) and Gilson and Vetsuypens (1993), provide us with a better foundation for our own research.

4.2.1 Post-bankruptcy performance and management turnover (1995)

In 1995, Hotchkiss analyzed post-bankruptcy performance and management turnover. Particularly, he investigated these issues in the three consecutive years after firms emerged from Chapter 11 (Hotchkiss, 1995).[6] The sample is comprised of 197 U.S. public companies filing for bankruptcy between 1979 and 1988.

Hotchkiss found that 32% of the successfully restructured firms either filed for Chapter 11 again or reentered into private restructuring of debt. Moreover, continuance of the pre-bankruptcy management in the restructured firm was correlated with poor post-bankruptcy

[6] This chapter of the Bankruptcy Code generally provides for reorganization, usually involving a corporation or partnership. A chapter 11 debtor usually proposes a plan of reorganization to keep its business alive and pay creditors over time. People in business or individuals can also seek relief in Chapter 11. (U.S. Courts, 2016).

performance. The poor financial performance of restructured firms indicated a bias towards continuance of unprofitable firms.

4.2.2 How costly is corporate bankruptcy for the CEO? (2016)

Eckbo, Thorburn, and Wang (2016) published a paper where they addressed the personal costs of CEOs in U.S. firms filing for Chapter 11 between 1996 and 2007. The personal costs they addressed were loss of equity in the bankrupt firm, forced relocation and training, and lower compensation in post-bankruptcy employment.

They found that one-third of the CEOs maintained executive employment either in the restructured firm or a new firm following bankruptcy. Moreover, these CEOs did not suffer any significant compensation loss. However, the CEOs leaving the executive labor market faced a median compensation loss amounting to USD 7 million in terms of present value. Moreover, the CEOs that stayed through the entire filing process faced a median equity loss of USD 11 million. Following, the personal costs of bankruptcy were considered to be substantial. Further, they analyzed the likelihood of maintaining an executive position. On the one hand, this likelihood was higher for CEOs in firms performing relatively well prior to bankruptcy, that were also the chairman and replacement CEOs. On the other hand, likelihood of not maintaining an executive position increased with higher age.

This study is particularly relevant as we apply several similar analyses. As such, it is necessary to address differences in our data foundation. Eckbo et al. (2016) had a sample comprising of significantly larger firms than our Norwegian sample. All their firms had a book value of assets amounting to a minimum of USD 100 million.

As their sample firms are substantially larger than our sample, CEO career changes got more publicity and were more easily accessible. For instance, it was not possible to address information regarding voluntary or forced turnover for our sample. Further, the Norwegian bankruptcy process and Chapter 11 filings have different outcomes. When filing for Chapter 11, the overall goal is to reorganize the company in order to keep its business running. Hence, in the U.S, CEOs can remain at the restructured firm if it emerges from the filing process. Eckbo et al. (2016) found that 14% of the CEOs remained with the restructured firm. As aforementioned, remaining at the firm is not an outcome for CEOs under the Norwegian legislation.

4.2.3 Control benefits and CEO discipline in automatic bankruptcy auctions (2003)

In Sweden, Eckbo and Thorburn investigated bankruptcies and CEO´s hedging incentives (Eckbo & Thorburn, 2003). The sample is comprised of 263 bankruptcies between 1988 and 1991. All sample firms had at least 20 employees and the average sale was USD 5 million.

Eckbo and Thorburn (2003) found that the median CEO compensation loss was 47% compared to a control group of CEOs in non-distressed firms. Such a compensation loss was considered substantial and likely to affect CEOs incentives. Consequently, they argue that CEOs are incentivized to invest conservatively as this increase the chance of firm survival and thus the rehiring probability. Hence, CEOs are not likely to engage in hedging behavior prior to bankruptcy as suggested by Aghion, Hart, & Moore (1992), White (1996) and Hart (2000). As a result, the interests of management and shareholders are conflicted which counteracts hedging behavior.

Amongst the most distinctive differences in legislation, are that bankruptcy filing automatically terminates the CEO´s employment in Sweden. Also, in Sweden, going-concerns can continue and CEOs be rehired.

4.3 Takeaways from the relevant literature

Our review of relevant literature has left us with a better understanding of applicable methodology and a foundation to build our research upon. We conducted several similar analyses as the previous studies and assess both pre- and post-bankruptcy costs. Particularly, we conduct similar pre-bankruptcy analyses as Gilson (1989) and Gilson and Vetsuypens (1993). Furthermore, we draw from the post-bankruptcy analyses conducted by Eckbo and Thorburn (2003) and Eckbo et al. (2016).

Another takeaway from the studies is the structure of data, more specifically the advantage of tracking filings firms and their CEOs three years prior to the bankruptcy. For the background data, we have obtained CEO- and firm-specific information, both proven to be significant in previous research. Similar to the Eckbo and Thorburn (2003), we have chosen to screen on number of employees instead of book value of assets. To have a foundation for comparison, we formed our hypotheses based on all the previous studies.

5. Data

In the following chapter, we describe the sample selection and define the variables used in our analyses. There are three main sources used to obtain data: First, Brønnøysund Register Centre for company and bankruptcy data. Second, The Norwegian Tax Administration for tax roll data. Last, personal data sources like LinkedIn, news articles, Wikipedia and executive data in the Brønnøysund Register for post-bankruptcy employment.

5.1 Background for the sample selection

The sample analyzed in this thesis comprises the largest bankruptcies in Norway between 2009 and 2013 from the Register of Bankruptcies (part of the Brønnøysund Register Centre).[7] Bankruptcies are filtered by firms having at least 10 employees pre-bankruptcy and total sales over NOK 3 million the last year of available book information. All companies are stock based but few are publicly traded.[8] We extracted the sample firms' financial accounts in the three preceding years to bankruptcy. The following output gives 1,023 unique bankruptcies and 1,446 CEOs within the four-year period including the bankruptcy year (year -3 to year 0).

In respect to after-bankruptcy employment we can utilize the legislation that mandates every firm to state the name of the CEO in their financial accounts. This provides precise data in regards to which CEOs attain a new executive position following bankruptcy. The CEOs' salaries, also stated in financial accounts, is used for the pre-bankruptcy compensation.[9] For post-bankruptcy compensation, we manually extracted tax rolls from 2015. In addition, a great effort was put down in manually obtaining educational-, employment- and industry data for each of the 1,446 CEOs.

[7] (Brønnøysundregistrene, 2016) – The Norwegian government agency that is responsible for the management of numerous public registers for Norway, including the Register of Bankruptcies.

[8] Due to few observations on publicly traded firms in this database, we include non-listed stock based firms.

[9] To reduce the influence of outliers, we analyze median salary data throughout this paper.

5.2 Characteristics of the sample firms

We track all sample firms for four years from year -3 relative to the bankruptcy, to the actual year of bankruptcy, year 0. As aforementioned, most major distressed firms participate in out-of-court negotiations with debtholders when restructuring. Consequently, there are few large firms in our sample.[10] Also, there is no information on the firms after they declare bankruptcy as they cease to exists. Lastly, all firms belong to an industry classification, as required by the Standard Industrial Classification of 2002 (SN2002). The SN2002 classification is used in all industry-specific variables throughout this paper.[11] In our sample, trade (32%) and building & construction (27%) represent the largest industries.

Table 1 provides an overview of the sample firms used in this thesis. The 1,023 firms are divided according to the year of bankruptcy. Also, we present sales, assets, industry-adjusted return on assets ("ROA") and leverage ratio ("leverage").[12,13] Lastly, number of employees from the most recent financial report are shown.

Filing		Total Sales[1]		Total assets[1]		ROA	Leverage	Employees
year	*N*	Mean	Median	Mean	Median	Median	Median	Median
2009	143	23,038	13,715	10,750	5,775	-5.8%	27%	14
2010	43	16,029	9,258	9,326	3,579	-10.7%	26%	14
2011	105	26,380	15,767	10,527	6,459	-10.4%	19%	15
2012[1]	325	61,314[2]	12,901	56,207[1]	4,632	-12.4%	30%	19
2013	407	29,611	16,332	15,173	5,805	-14.2%	29%	17
All	1,023	40,102	14,853	29,696	5,362	-11.8%	28%	16

[1]Total sales and assets are shown in NOK millions.
[2]In 2012 a very large company at the time, REC Wafer, went bankrupt. This effects the means of total sales and assets.

Table 1 Annual distribution of firm bankruptcies and characteristics

In this summary, we see the clear majority (732 or 72%) of bankruptcies occurred in the years 2012 and 2013. Further, the financial size of this sample is small when compared to similar studies in the U.S. but on par with the Swedish selection of Eckbo and Thorburn

[10] In the sample, there are 26 firms with more than 100 employees pre-bankruptcy. Additionally, only two firms have total sales of more than NOK 1 billion.

[11] Of the 17 difference industry classifications, only 10 are represented in our sample.

[12] Return on Assets ("ROA") defined as EBITDA (earnings before interest, taxes, depreciation and amortization) over total assets.

[13] Leverage ratio ("leverage") defined as total liabilities over total assets.

(2003). Furthermore, the financial performance for these companies are significantly worse than industry peers. This is evident by the median industry-adjusted ROA and leverage, with 12 percentage points lower *ROA* and 28 percentage points higher *leverage* than peers.[14] Moreover, *ROA* falls to -20% in year -1. Simultaneously, *leverage* rise to 37% in year -1. This undoubtedly illustrates how the companies are struggling financially in the years leading to bankruptcy.

While searching for explanatory determinants for CEO outcomes and pre-filing traits, we compiled various firm characteristics and used them in our analyses. We consider whether a firm is competing in a *High-margin industry* or not. The *High-margin industry* dummy indicates whether a firm is in an industry that perform well that year, determined by an *industry-average ROA* over 5%. As shown in Table 1, we apply their *ROA* and *leverage* compared with peers.

The firm characteristics include other variables like S*ize* (log of total sales).[15] *Cash* (cash and short-term investments) and *Tangibility* (net property, plant, and equipment), both normalized by total assets. The last firm characteristic, *Trade credit,* is included to capture possible creditor control rights. This dummy indicates whether the firm has more than two-thirds of their total liabilities as non-interest-bearing debt.

In Table 2 all the firm-specific variables used throughout this thesis is presented with key statistics.

Pre-bankrupt statistics	*N*	Mean	Standard deviation	Min	Median	Max
Sample firm characteristics						
High-margin industry	825	0.45	0.50	0	0	1
Industry-adjusted ROA	688	-0.27	0.80	-12.17	-0.12	1.55
Industry-adjusted leverage	688	0.53	1.02	-0.74	0.28	11.31
Size	768	9.62	1.18	4.74	9.61	15.78
Cash	822	0.13	0.16	-0.56	0.06	0.97
Tangibility	822	0.25	0.24	0.00	0.16	1.00
Trade Credit	827	0.73	0.44	0	1	1

Table 2 Summary statistics for the firm-specific variables used in the analyses

[14] Industry-peers are filtered on total income over NOK 3 million and compete in the same sector.

[15] Due to assumed nonlinear relationship between sales and dependent variables, we use the logarithm of sales as explanatory variable.

5.3 Characteristics of the sample CEOs

Another essential part to CEO outcomes is his or her own attributes. In addition to pre-bankruptcy data for firms and CEOs, we extract post-bankruptcy data for CEOs. This data derives from 2015 and includes employment, employer-industry, salary and education. [16,17]

In regards to explanatory determinants of CEO-characteristics, we look at whether the CEO is an *Incumbent* or not. An incumbent CEO is hired in year -3 or before, or he is the first CEO of a newly established firm within the four-year framework. A replacement CEO is hired between year -3 and year 0 to replace another CEO.

Furthermore, we look at whether a CEO is the company's *Chairman* as well. The CEO characteristics also include *Age* and their *Education* in numbers of years in higher education, from high school at 0, to PhD at 8. Other characteristics include a dummy indicating if the given CEO has been involved in other bankruptcies in the same five-year data sample, noted *Before*. The last CEO characteristics is a dummy indicating whether the CEO has been *Replaced*. Hence, operating as a dummy for those that work as CEO in the firm while going bankrupt (never replaced).

[16] As per December 2016, 2015 is the last year with annuals and the only year with accessible tax rolls.

[17] See Chapter 10, discussion on weaknesses in regards to inaccessible tax rolls data from years prior to 2015.

Below is a table presenting statistics for the CEO-specific variables used further in this thesis. In this table, we separate incumbent and replacement CEOs to control for differences in prerequisites. Individual statistics on these groups are such provided.

Pre-bankrupt statistics	*N*	Mean	Standard deviation	Min	Median	Max
All CEOs						
Age	1,390	46.5	10.1	21.0	46.0	78.0
Incumbent	1,446	0.71	0.46	0	1	1
Chairman	1,446	0.32	0.47	0	0	1
Before	1,446	0.21	0.41	0	0	1
Replaced	1,446	0.29	0.46	0	0	1
Education	262	2.34	1.98	0	3	8
Incumbent CEOs	1,023					
Age	1,006	47.2	10.2	24.0	47.0	78.0
Chairman	1,023	0.35	0.48	0	0	1
Before	1,023	0.21	0.41	0	0	1
Replaced	1,023	0.35	0.48	0	0	1
Education	171	2.26	2.02	0	3	8
Replacement CEOs	423					
Age	384	44.6	9.7	21.0	45.0	72.0
Chairman	422	0.23	0.42	0	0	1
Before	423	0.21	0.40	0	0	1
Replaced	423	0.15	0.36	0	0	1
Education	91	2.48	1.92	0	3	6
CEO compensation pre-bankruptcy[1,2]						
All	819	644,974	420,453	4,371	584,374	4,873,453
Incumbents	698	653,871	383,821	4,371	580,763	2,461,488
Replacements	121	695,273	582,849	27,012	602,093	4,873,453

[1]Annuals filled with zero in CEO compensation is excluded from statistics.
[2]We adjust salaries with 3% yearly growth, and all salaries are shown in 2015 NOK.

Table 3 Summary statistics for CEO-specific variables used in the analyses

Evidently, age of incumbent CEOs are slightly higher than for replacement CEOs. Further, 71% of CEOs are incumbents and thus became CEO at year -3 or earlier (134 of incumbent CEOs are hired in year -2 or -1 due to the recent establishment of the firm). Compared to the replacement CEOs they are more likely the chairman (35% versus 23%). Not surprisingly, they have also a much higher chance of turnover (35% versus 15%). It is interesting to note that 15% of the replacement CEOs are themselves replaced. Additionally, replacements have a slightly higher average education and pre-bankruptcy salary compensation.

Lastly, in Table 4, we present a brief overview of the new employment situation in year 2015. As evident, only one-fifth of the sample maintains a CEO position after bankruptcy. This will be analyzed and discussed in section 6.3.

	Executives	Non-executives			No employment	
(2015)	CEO	Independent	Other	Missing	Retired	Dead
Number of observations	281	95	326	670	62	12
In percentages[1]	20%	7%	24%	49%	-	-

[1]Only those employed are included in the percentages.

Table 4 Post-bankruptcy employment situation (2015)

5.4 Estimating post-bankruptcy salary and compensation change

We obtain taxable income for all CEOs from 2015 as the post-bankruptcy salary.[18] Norwegian tax rolls are publicly available which provides us with accurate information on post-bankruptcy salaries. Hence, we are able to relax assumptions of an equal pay for the same employment, as applied by Eckbo et al. (2016). Moreover, we add average tax deductions to this number as tax rolls figures are net of deductions. In 2015, the average tax deductions were NOK 105.5 thousand (Statistics Norway, 2015).[19] Furthermore, in order to compare the obtained salaries from 2015, we adjust pre-bankruptcy salaries with 3% annually, reflecting the historical level of income growth in Norway (Norway Statistics, 2015).

[18] Taxable income comprises salaries and all taxable gains e.g. profit from sale on real estate and stocks.

[19] (Statistisk Sentralbyrå, 2016) – Provides us with national macro economics data including yearly average salary growth.

The estimation is comprised of multiple steps and are displayed in the appendices.[20] The table below comprises summary statistics regarding compensation for all CEOs, the ones maintaining an executive position and the ones leaving the executive labor market.

Post-bankruptcy statistics[1]	*N*	Mean	Standard deviation	Min	Median	Max
All CEOs	402	673,971	738,315	105,531	520,029	10,805,992
Incumbents	289	674,235	821,841	105,531	487,649	10,805,992
Replacements	113	673,298	463,553	129,350	562,903	2,777,214
Executives	95	924,102	758,410	105,531	704,558	4,288,221
Incumbents	72	884,071	749,074	105,531	701,886	4,288,221
Replacements	23	1,049,416	790,625	259,205	723,804	2,777,214
Non-executives	307	596,570	715,693	121,472	475,301	10,805,992
Incumbents	217	604,612	834,612	121,472	449,041	10,805,992
Replacements	90	577,179	264,567	129,350	536,296	1,427,437

[1] All figures are displayed in 2015 NOK.

Table 5 Post-bankruptcy compensation statistics

From Table 5, we can see that the average CEO salary in our sample is roughly NOK 674 thousand post-bankruptcy. In comparison, the average CEO salary in Norway was NOK 624 thousand in 2015 (Nordrik & Falkum, 2015).

[20] Post-bankruptcy estimations can be found in Table 25, in appendix 10.6.1.

6. Empirical analyses and results

6.1 Introduction to the analyses conducted

In the previous chapter, we introduced our sample data and various summary statistics. In this chapter, we outline the hypotheses for our research, the methodologies applied and the results from the different analyses. First, we study determinants of personal costs in terms of turnover. Second, we analyze factors affecting the categorical outcomes of the sample CEOs' new employment. Third, we examine CEOs compensation prior to bankruptcy and to what extent it is reduced when approaching bankruptcy. Fourth, we address post-bankruptcy costs in terms of compensation losses.

6.2 CEO turnover

6.2.1 Introduction

Gilson (1989) used CEO turnover as a proxy for personal costs of bankruptcy. In addition to potential financial losses from being replaced, turnover can inflict a personal cost in the form of reduced reputation. This is because leaving a distressed firm is usually not highly regarded. In other research, there is evidence of substantial reputational costs through turnover (Gilson, 1989; Eckbo et al. 2016). To better interpret turnover costs of bankruptcy, this section provides turnover statistics and models on CEO turnover with estimations on the full sample, incumbents only, and for industries in different financial situations.

6.2.2 Hypotheses

1. *We expect the CEO turnover rate to be similar to other studies at roughly 30% for distressed firms.*

We motivate this hypothesis with the expectation of a Norwegian CEO turnover rate similar to the U.S. rate. In the U.S, CEO turnover is well researched and in combination with financial distress are usually reported close to 30% a year (Gilson 1989, Ayotte & Morrison, 2009; Eckbo et al. 2016).[21]

2. *CEO turnover is dependent on his or her performance reflected in firm fundamentals.*

This hypothesis reflects the fundamental belief that good (bad) performance is rewarded (punished). The motivation behind is to verify if a performance effect is stronger, weaker or even non-existing in a sample of relatively small firms (Norway) compared with studies on large firms (U.S).[22] Previously, CEO turnover studies in the U.S. have confirmed this hypothesis (Huson, Malatesta, and Parrino, 2001; Jenter and Kanaan, 2015; and Eckbo et al., 2016).

[21] (Ayotte & Morrison, 2009) – This paper studied large publicly held companies that filled for Chapter 11 in 2001. They found CEO turnover in their sample to be close to 40%.

[22] In the Swedish study a comparable turnover analysis was not conducted.

6.2.3 Methodology

Logistic regression

An Ordinary least-square ("OLS") model could possibly violate the assumptions of normal distribution and homogenous error terms, notably if the dependent variable has an uneven outcome probability. Following, a logistic regression is applied in section 6.2 (CEO turnover) and 6.3 (New employment) on a set number of possible outcomes, meaning the dependent variable is categorical.

In section 6.2, we have a dummy dependent variable, thus a binary logistic model is used. In section 6.3, we also include a three-way dependent variable, and such a multinomial logistic model is provided. When interpreting coefficients in logistic regressions be aware that the coefficients represent the change in the logit for each unit change in the predictor and, unlike an OLS regression, logit is not intuitive.[23] To get a best distribution-fit, the logic model fared better than the probit model and the latter is thus dropped from presentation in the paper.[24] We apply robust standard errors to cope with potential heteroscedasticity problems.[25]

Sample

Each regression in this section has *Replaced* as the dummy dependent variable, thus giving a binary outcome for the model; not replaced (0) or replaced (1). Regressing on CEO turnover, we initially use the full CEO sample in Model 1. Additionally, we include two models with filtered samples, one for incumbent CEOs only, and one for the two different industry-categories (high-margin or other). Regardless, in all models some observations are omitted due to missing information in variables. The following three models for the CEO turnover are; (1) the full sample (912 observations), (2) incumbent CEOs only (649 observations), and (3) filtered in high-margin industries and other (respectively 419 and 493 observations). All models use both CEO- and firm-specific characteristics with no exceptions. In the filtered models (2 and 3), the *Incumbent* and *High-margin industry* dummies are dropped due to perfect collinearity.

[23] (Rodriquez, 2007) – Handbook for Multilevel Analysis.

[24] A logit regression has better interpretation than a probit as it can be interpreted as modelling log odds. One decides the best fit by comparing the likelihood value. In our results logit provided the best likelihood value.

[25] Robust standard errors are safe to use even when no heteroskedasticity problem is present, especially with larger samples. Even if there is no heteroskedasticity, the robust standard errors will become just conventional OLS standard errors.

6.2.4 Results

CEO turnover statistics

Table 6 shows how the development process of CEOs go throughout the years prior to bankruptcy. There is a total of 1,023 incumbent CEOs. 889 are from the first available year (year -3) and 134 incumbent CEOs come from new firms established less than three years prior to bankruptcy. In addition, 423 CEOs are hired to replace the departing CEOs, which gives 1,446 CEO observations in the total sample.

					CEOs who depart		
Event year	Sample Firms	Missing Firm data	Incumbent CEOs	Replacement CEOs	All	Incumbent CEOs	Replacement CEOs
-3	889	134	889				
-2	972	51	825	147	147	147	0
-1	1,015	8	726	289	183	142	41
0	1,023	0	664	359	93	70	23
Net/Total			1,023	423	423	359	64
Rate of replacement (the whole period)						0.35	0.15

Table 6 CEO departures and replacements prior to bankruptcy

As shown by Table 6's rate of replacement, 35% of incumbent CEOs have left their position before the companies' bankruptcy. In comparison, Eckbo et al. (2016) found this rate to be 57% during a similar three-year period up to and including year 0. To compare CEO turnover with more studies, we look at yearly turnover rates.

Of all departing CEOs, the largest group leaves the year prior to bankruptcy (183). Two years before, 147 leave. A lower number, 93, leave during the year of bankruptcy. This translates into an annual turnover between roughly 10% in year 0, 20% in year -1 and 15% in year -2 (average overall 14%). Differing to what was stated in hypothesis 1, this is somewhat lower than findings in the U.S. distressed market at roughly 30% a year (Ayotte & Morrison, 2009; Eckbo et al. 2016).[26] Additionally, Gilson (1989) reported an annual CEO turnover rate in distressed firms at 52%.[27] One probable reason for the considerable difference is the size of the companies. In Norway, most companies are relatively small and thus the CEO likely receives less pressure from external sources and other executives. Also, Daily and

[26] (Ayotte & Morrison, 2009) – This paper studied large publicly traded companies that filed for Chapter 11 in 2001. They found turnover in their sample to be close to 40%.

[27] (Gilson S. C., 1989) - 52% of sampled CEOs (U.S) experienced turnover if they are either in default on their debt, bankrupt, or privately restructuring their debt to avoid bankruptcy.

Dalton (1993) found replacing CEOs to have limited financial effect, but primarily used to demonstrate effective governance. This finding is likely more applicable to large firms.

Unfortunately, there is no research on the Norwegian CEO turnover rate per today. However, a global study finds the yearly replacement rate of CEOs in large solvent firms to be about 16.6% (Pricewaterhousecoopers, 2015).[28] Other research reports this global rate slightly higher at around 20% (Huson et al. 2004; Jenter & Kanaan, 2014).

Next, this section will focus on explaining the differences and determinants of two groups; those who are replaced at some point in the three years leading to filing (*Replaced*=1), and those who stay CEO at the time of bankruptcy (*Replaced*=0). This dependent variable is a dummy indicating that 423 CEOs are replaced by a replacement CEO, 359 of these were incumbent CEOs and 64 were replacement CEOs themselves (Table 6). The rest of the sample, 1,023 CEOs, remains with the firm as CEO at the time of bankruptcy, and is such never replaced (664 incumbents and 359 replacements).

[28] (Pricewaterhousecoopers, 2015) – *"CEO turnover at the 2500 largest companies in the world rose from 14.3% in 2014 to 16.6% in 2015—a record high for the CEO Success study."*

Determinants of CEO turnover

Presented in Table 7 are three logit regression models for the dependent variable *Replaced*. They differ on sample, while the explanatory variables remain similar. The dependent variable has only two outcomes: Not replaced CEO or replaced CEO. Model 1 is the full sample model, Model 2 only looks at incumbent CEOs, while Model 3 looks for differences in high-margin industries versus other.

(Replaced)	Full Sample (Model 1)	Filtered Sample (Model 2)	Industry Filtered Sample (Model 3)	
Variable[1]		Incumbent CEOs	High-margin	Other
CEO characteristics				
Age	-0.010	-0.008	-0.020*	-0.003
	[0.008]	[0.009]	[0.012]	[0.012]
Incumbent	1.459***		1.109***	1.99***
	[0.207]		[0.286]	[0.315]
Chairman	-2.159***	-2.331***	-1.287***	-2.808***
	[0.256]	[0.283]	[0.344]	[0.377]
Firm characteristics				
High-margin industry	-0.127	-0.330*		
	[0.173]	[0.198]		
Industry-adjusted ROA	-0.120	-0.254	-1.676***	-0.015
	[0.129]	[0.172]	[0.577]	[0.114]
Industry-adjusted leverage	0.074	0.0305	-0.961*	0.160*
	[0.082]	[0.111]	[0.504]	[0.095]
Cash	-0.397	-0.187	-1.191	0.138
	[0.577]	[0.670]	[1.051]	[0.738]
Tangibility	0.305	0.569	0.432	0.171
	[0.358]	[0.417]	[0.550]	[0.509]
Trade credit	0.308	0.295	0.409	0.057
	[0.198]	[0.223]	[0.281]	[0.291]
Size	0.054	0.078	0.069	0.078
	[0.073]	[0.084]	[0.099]	[0.115]
Pseudo-R^2	0.154	0.147	0.010	0.246
Observations	912	649	419	493

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 7 Determinants of the probabilities of turnover prior to bankruptcy

Hypothesis 2 question whether firm fundamentals affect CEO turnover (represented by *Industry-adjusted ROA* and *leverage*). However, it is also interesting to compare CEO characteristics in our thesis with previous research on CEO turnover.

The only coefficients that are significant throughout all the models are the *Chairman* dummy and the *Incumbent* dummy. That is, the chance of a CEO turnover decreases with him or her

being a chairman, and increases if the CEO is an incumbent. Both results are logical and in line with Eckbo et al. (2016). The significance of the *Chairman* coefficient is not surprising. When a CEO also acts as chairman, he has substantial power over the decision to replace the CEO (i.e. himself). This also coincide with the finding that lack of independent leadership decreases CEO turnover (Goyal & Park, 2002).[29] Many chairman-CEO combos are also fully owners, especially in smaller companies. With respect to the incumbent coefficient, the natural CEO turnover rate is more present as incumbents have managed the firm for a longer time.[30] Also, incumbent CEOs are more likely to have a responsibility in the distressed situation.

Of the three CEO characteristics, only the *Age* coefficient is not significant. It might be surprising that age is not a determining factor for replacement of CEOs.[31] However, when we consider the average age of 46 years, it is understandable that age do not affect turnover, as an eventual retirement is likely a long way off. In comparison, the average CEO in the U.S. studies of Gilson (1989) and Eckbo et al. (2016) was almost 10 years older, and had thus more significant effect.

As identified, incumbents have a higher turnover than replacements. In Model 2, we only look at the former. Similar to Model 1, none of the firm characteristics are significant, the exception being *High-margin industry* (on a 10% level). Further, there is no evident firm performance effect before we separate the sample by industry margins (column 3 to 4). This is different to what we stated in hypothesis 2. In comparison, for solvent firms, Huson et al. (2001), found significance in firm performance for CEO turnover in the U.S. labor market.[32] For distressed firms, Gilson (1989) and Eckbo et al. (2016) also found significance in operating performance for CEO turnover in the U.S. labor market.

Among the firm characteristics, dividing the sample firms between high-margin industries and other, we see some significance. CEOs in high-margin industries are dependent on their

[29] Goyal and Park (2002) found in their paper that: "…lack of independent leadership in firms that combine the CEO and Chairman positions makes it difficult for the board to remove poorly performing managers."

[30] (Pricewaterhousecoopers, 2015) – As a proxy for the natural turnover rate. An analysis of the global CEO employment market showed an annual CEO turnover of about 16.6% in 2015.

[31] (Eckbo, Thorburn, & Wang, 2016) – Found age to be significant and positively correlated with volunteered turnover.

[32] The paper (Huson, Parrino, & Starks, 2001) showed how CEO turnover in solvent firms were highly significant with his or her operating performance.

performance compared with peers.[33] CEOs that perform well in industry-adjusted ROA are less likely replaced. This result is also similar to other findings on CEOs' relative performance (Jenter & Kanaan, 2015; Eckbo et al. 2016). The effect is not present in other industries, per our findings. One possible explanation is that firms in "well-going" industries are more aware of industry-specific performance. There is a weak significance on *leverage* which is negative for high-margin industries and positive for other. This could indicate that firms in high-margin industries are less attentive of high leverage, while it is considered riskier with high leverage in lower-margin industries leading to pressure from debtholders. In regards to this, Gilson (1989) found that 21% of all CEO replacements were initiated by the firm's creditor.

In sum, hypothesis 2 suggesting that firm performance also affects CEO turnover in the Norwegian sample is confirmed, but only for high-margin industries. In these industries, there are significant effects from the CEOs ability to help the firm over/under-perform relative to its peers. In other industries, we find no significant effects from firm performance contrary to our hypothesis. There is no further evidence of firm-specific effects on CEO turnover in the Norwegian sample.[34] In addition, the likelihood of CEO turnover is significantly higher for incumbent CEOs and it decreases with him or her being the chairman of the company. Age does not seem to affect turnover in the relatively young Norwegian sample.

Sub-conclusion

Considering turnover as a personal reputation cost for CEOs, our findings indicate lower costs of bankruptcy for Norwegian CEOs compared with their American counterparts.[35] We argue that the low reputational costs are insufficient to incentivize hedging behavior.

[33] Namely, high-margin industries in this model were building/construction and manufacturing.

[34] In comparison, Eckbo et al. (2016) had a database which consisted of much larger firms and more significant firm-specific determinants.

[35] The Swedish study did not include a turnover analysis that is similar enough to compare.

6.3 New employment and career changes following bankruptcy

6.3.1 Introduction

What portion of the sample are given another chance as a CEO? Moreover, what variables affects this chance? In this section, the focus is on the employment transaction each CEO must undergo in the process towards or after the company is declared bankrupt. Like CEO turnover, we look at new employment as a possible source of personal costs of bankruptcy. Employment change can possibly result in loss of status, as a CEO position is generally given high status. We examine our sample's situation some years after the firm went bankrupt. Also, we provide detailed statistics on the career changes undergone in terms of employment categories and industries, and model on the outcome.

6.3.2 Hypotheses

3. *Based on previous research, we expect one-third of CEOs to maintain an executive position following bankruptcy.*

Other research on post-bankruptcy employment is sparse, thus we mostly compare our findings with Eckbo et al. (2016). In that study, one-third of CEOs maintained an executive position following bankruptcy. If our results are similar, we can draw inference on observed hedging behavior in the U.S. (e.g. Bates, Kahle, & Stulz, 2009; Eisdorfer, 2008; Jensen & Meckling, 1976).

4. *CEOs who performed better in terms of firm characteristics are more likely to stay in the executive labor market.*

Like hypothesis 2, we base this hypothesis on a general belief that good performance is rewarded, this time with a new CEO position. If firm characteristics prove an important driver for new employment, it might help incentivize CEOs to perform. In addition, this hypothesis stems from the U.S. finding that firm performance is highly significant with new employment outcome (Eckbo et al. 2016).

6.3.3 Methodology

Logistic regression

Like the CEO turnover analysis, we model on a categorical dependent outcome, new employment. To best capture the outcome of the dependent variable, we again applied logistic regressions. In this section, we include two models, one with three outcomes and one with two. The former is such regressed via a multinomial logit regression while the latter via binary logit regression (identical to the previous models in section 6.2). As earlier, we apply robust standard errors to cope with possible heteroscedasticity problems.

Sample

As all firms are required to list their CEO, we know who are CEOs and who are not in 2015. We found this by using a database for all the currently listed executives and manually matching them with each individual name from our sample (Proff, 2016).[36] For other employment types, we took to various sources like social media, news articles and Wikipedia. While extracting employment situations, we also include information on current employer industry.

We categorized the employment situation some years after bankruptcy into four groups under two main categories. The first category and group is a new CEO *executive* position, registered in annuals as executives. The other main category, *non-executives*, we divide into three groups: Independent/consultants, others and missing. Independent/consultants are found in financial accounts (and the executive register) but a cross check of their firms shows that they do not match our criteria for a CEO, the firms are too small (mostly only one employee) and usually offers consulting- or contracting services.

The rest of the *non-executive* sample have various responsibilities, commonly as a regular employee. We were not able to identify further details on employment for a large portion of the *non-executives*, these are noted as *missing*. Due to the general anonymity of our sample, it was expected. We assume all these people to hold regular employment (like others). Included in the missing group were 62 retirees and 12 people declared dead between 2009

[36] (Proff: The Business Finder, 2016) – Internet business database with all registrated stock based norwegian companies and executives. The currently listed executives in this database are as reported year end 2015.

and 2015.[37] We omitted these from further modelling. Paired with a few missing observations in determinant variables, the sample size of both models is reduced to 873.

Two similar models with different categories

There are two models provided in this chapter to better comprehend what determines the outcome for a CEO in the post-bankruptcy labor market. The only difference between the two models is that the first separates between; new CEO position, independent/consultant position and regular employment, while the second combines all non-executives in one group, essentially a dummy for new executive position or not. We regressed both models with CEO- and firm-specific characteristics. We also applied the models with only incumbent CEOs but as there is no evident difference between incumbent and replacement CEOs in the original models, we provide this only in the appendices.[38]

[37] Retired are over 65 years of age in 2015 and has no information on employment. Average age of retirement in Norway is 64 (Dahle, 2009).

[38] Models on new employment career changes for incumbent CEOs can be found in the appendix 10.3.3, Table 20.

6.3.4 Results

CEO employment after bankruptcy

Before analyzing hypothesis 4 in regards to firm performance and new employment outcome, we present statistics on new employment and discuss personal costs of the outcome as per hypothesis 3.

Extracted data on post-bankruptcy employment from 2015 are categorized as shown in Table 8 below. We divide the groups between incumbent- and replacement CEOs and show the p-values of the proportional difference. Included in the table are 1,446 after bankruptcy observations.[39]

	All CEOs		Incumbent CEOs		Replacement CEOs		P-value
New employment	N	Percent[2]	N	Percent[2]	N	Percent[2]	difference
Executives							
New CEO position	281	20%	195	20%	86	21%	(0.282)
Non-executives							
Independent	95	7%	70	7%	25	6%	(0.257)
Other (regular)	326	24%	227	24%	99	24%	(0.298)
Missing (regular)[1]	670	49%	473	49%	197	48%	(0.456)
Retired or Dead	74	-	58	-	16	-	(0.026)**

*** p<0.01, ** p<0.05, * p<0.1

[1]We assume those not identified to have regular employment.
[2]Only the employed are included in the percentages.

Table 8 New employment distribution post-bankruptcy

We identify 1,376 as employed excluding 62 which are assumed to be retired and 12 known dead. Post-bankruptcy, 20% (281) attained new employment as a CEO. In addition, 7% (or 95) were listed as CEO of a firm with one employee or a few at the most, typically an independent consultant.[40] This group is classified as *non-executives*, as mentioned. The last group, regular employment, comprises 73% (or 996 observation).[41] In addition, we identified 381 post-bankruptcy employers' industries. Percentagewise, 47% end up in the same industry as prior to bankruptcy. This finding is elaborated in the appendices.[42]

[39] Due to the legislation requiring executive information to be public, we know who is not an executive CEO. As mentioned, about half could never be accounted for and we can only know for certain that they are *not* executives.

[40] See data section 5.1 for a discussion on firm requirements restricting independent/consultants from being analyzed as executive CEOs.

[41] In this group, we treat *other* and *missing* similar. Both assumed regular employees.

[42] For more information on industry-data and comparison with previous research, see appendix 10.3.2.

With consideration to hypothesis 3, the share of the sample with a new executive position is less than expected. Subsequently, there seem to be higher personal status costs in the Norwegian sample compared with countries observed in previous studies of approximately 30% – 40% (Gilson, 1989; Eckbo & Thorburn, 2003; Eckbo et al., 2016).[43] In the U.S. study on post-bankruptcy employment by Eckbo et al. (2016), one-third maintained an executive position. This compared with Gilson's findings (Gilson, 1989). In the Swedish study of Eckbo and Thorburn (2003), 39% were rehired as the CEO in firms sold as a going-concern. The different legislations, and in particular no going-concerns in our sample, is likely an explanation for dissimilar results.

Splitting the sample between incumbent- and replacement CEOs, we see no difference in share of new employment except for retirement and death, as evident by the p-values in Table 8. About the retired and dead group, the difference is not surprising considering that we know the incumbent group is older and thus more likely forced an early retirement if replaced pre-bankruptcy.

[43] As discussed, these researches includes going-concerns. CEOs are potentially rehired in the going-concern. This is not a possible outcome for our sample. Hence, all new Norwegian CEO positions are in new firms.

Identifying new employment determinants

As seen from table 8, only one-fifth holds a CEO position post-bankruptcy. Next, we will focus on which characteristics determine post-bankruptcy employment, whether it being as CEO, independent/consultant or regular employment. In the first multinomial logit regression, there are three outcomes: the base outcome is a new executive position, in column 1 the outcome for independents, and lastly regular employment in column 2. Model 2 is a similar model, but has only two outcomes: New executive position or not (*executive* is the base outcome). Model 2 loses some information about the differences between independent/consultant and regular employment but are able to capture more accurately the variance, represented by the R-squared.

(Employment chance)	Full Sample (Model 1)		Full Sample (Model 2)
Variables[1]	Independent/Consultant	Regular	Non-executive
CEO characteristics			
Age	0.050***	0.027***	0.029***
	[0.016]	[0.009]	[0.009]
Incumbent	-0.170	-0.006	-0.0209
	[0.331]	[0.195]	[0.195]
Chairman	-0.793**	-0.501***	-0.525***
	[0.357]	[0.193]	[0.192]
Firm characteristics			
High-margin industry	-0.0254	-0.195	-0.179
	[0.325]	[0.186]	[0.185]
Industry-adj. ROA	0.173	0.139	0.142
	[0.282]	[0.199]	[0.153]
Industry-adj. leverage	0.414*	0.281	0.293
	[0.215]	[0.189]	[0.184]
Cash	0.163	0.286***	0.275***
	[0.138]	[0.081]	[0.077]
Tangibility	0.405	0.633	0.614
	[0.697]	[0.423]	[0.431]
Trade credit	0.035	-0.007	-0.003
	[0.375]	[0.222]	[0.224]
Size	-0.244*	-0.296***	-0.291***
	[0.139]	[0.082]	[0.074]
Pseudo R^2	0.049	0.049	0.063
Observations	873	873	873

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] Observed but not included are the intercepts.

Table 9 Determinants of the probabilities of career outcomes following bankruptcy

Table 9 displays the determinants for outcomes other than a new executive position (base category). Model 1, as aforementioned, presents determinants for becoming independent/consultant (column 1) and regular employments (column 2). While Model 2

only shows the combined outcome for non-executives (regular and independent/consultant) in column 3. About 20% are rehired in a new executive position, while 7% and 73% end up with independent/consultant work or regular employment, respectively. As stated in hypothesis 4, we expect significant effects from pre-bankruptcy firm performance on new employment outcome. Further, we are interested to know how this compares with other research.[44]

To extend the comparison with other research, we briefly look at CEO traits first. The likelihood of leaving for independent/consultant employment is significant and positive with age (column 1). This is logical as many former older CEOs chose to use their experience as an independent worker or consultant. This supports the findings in the U.S. by Eckbo et al. (2016). The effect is similar but weaker when leaving for regular employment. Further, the likelihood of leaving for independent or regular work decreases with chairmanship as many chairmen seems to attain a new executive position. We did not foresee the negative association between chairmanship and leaving the executive labor market. Many chairman-CEO combinations are founders and likely more prone to establish a new firm. Lastly on the CEO characteristics, we do not find any difference between incumbents and replacements likewise to what the p-values of Table 8 indicated.[45]

With respect to firm characteristics, no particular firm performance effect is present (represented by *Industry-adjusted ROA* and *leverage*). This contrasts the U.S. findings that found significant negative correlation between industry-adjusted ROA and leaving the executive market (Eckbo et al. 2016). Also, there seems to be only minor differences between those who attain a new executive position and those who work as independent/consultants. Most noticeably, the chance of leaving the executive labor market decreases with the size of the firm, possibly explained by the skills required to manage a larger firm. There is an even stronger negative significance on the size coefficient and the chance of leaving to regular employment compared with an independent/consultant position. This could indicate that independent/consultant employment requires more skills than regular employment or that becoming an independent/consultant is a way to capitalize on

[44] There is little research on employment change for CEOs following bankruptcy. The best comparable research is the U.S. study mentioned throughout this paper (Eckbo et al. 2016). This study also looks at the chance of maintaining executive employment.

[45] Models on new employment career changes for incumbent CEOs can be found in the appendix 10.3.3, Table 20.

acquired skillset. Lastly, higher cash/assets balance increases the chance of leaving for regular employment.

In general, the lack of additional significant firm characteristic coefficients surprised us. Particularly, industry-adjusted performance metrics as stated in hypothesis 4 came to mind. The considerable timespan that has passed from the pre-bankruptcy data to their new employment could be an explanation.

In Model 2, we combined regular employees and independent/consultants in a full non-executive category. As expected, the coefficients resemble those in column 2 (regular outcome) as most of non-executives derive from the "regular-employment" group. This model gives a slightly stronger adjusted R-squared indicating a better fit on variance.

Sub-conclusion

A smaller portion of our sample (one-fifth) finds new employment as CEO compared with research in the U.S. (Gilson, 1989; Eckbo et al., 2016) and Sweden (Eckbo & Thorburn, 2003). This indicates higher personal status costs in Norway. The different legislations, and in particular no going-concerns in our sample, is likely an explanation for dissimilar results. Also, CEO status in small sized firms are arguably less important (in comparison with the U.S).

Our analysis of the difference between attaining a new executive position or not (per Model 2) show that there is little firm performance effect on the outcome. This also differs from previous research. In addition, the chance of leaving the executive labor market increase with age, while it decreases with previous chairmanship.

6.4 CEO compensation prior to bankruptcy

6.4.1 Introduction

This section provides estimates for personal financial costs and determinants of the CEO compensation prior to bankruptcy. First, if a distressed situation results in a salary reduction for a CEO, personal costs occur before the bankruptcy is declared. Gilson and Vetsuypens (1993) found evidence for this type of personal costs as CEOs experienced large salary and bonus reductions prior to bankruptcy. Second, the personal cost of bankruptcy from compensation loss (after bankruptcy) for a CEO is also very dependent on the compensation they had prior to bankruptcy, as one of two components. In addition, we examine any potential differences between incumbent- and replacement CEOs and whether there is a relative difference between those replaced and those not.

6.4.2 Hypotheses

5. *Pre-bankruptcy salary is expected to decrease significantly when the firm is close to bankruptcy.*

We motivate this hypothesis with both previous research and economic reasoning. When firms are increasingly distressed, one can expect cuts to be done in several areas, including CEO compensation. As mentioned, Gilson and Vetsuypens (1993) observed reduction in salary when approaching bankruptcy.

6. *Compensation for CEOs of well performing firms are likely better.*

Again, we apply the theory that good performance is rewarded. In this case, we examine a CEO's performance as proxied by firm performance compared with peers. This hypothesis originates from previous research which finds this effect significant, e.g. (Wallsted, 2000; Jeppson, Smith, & Stone, 2009; Eckbo et al. 2016).

6.4.3 Methodology

OLS regression and log transformation

In this analysis, we use pre-bankruptcy compensation data in combination with CEO- and firm characteristics to possibly identify determinants of CEO compensation prior to bankruptcy. As the pre-bankruptcy compensation dependent variable is continuous, we provide two OLS regressions in this section. Due to skewed distribution in Model 1, we use

log-transformed salary as the dependent variable to adjust for some outliers with abnormal high salary. This transformation also ensured a homoscedastic model. To get a more intuitive interpretation of each variable, we also provide a leveled model (Model 2).[46] As earlier, we apply robust standard errors to cope with the heteroscedasticity problems in model 2.

Sample

The objective of this section is to find empirical evidence that help explain how CEO compensation varies before it is too biased from financial distress. We are therefore going to examine determinants for pre-bankruptcy salary based on CEO and firm-specific data in year -3 and year -2. For the statistical summaries, year -1 is also included.

Essential to the outcome of this analysis, are no zero-values. When log-transforming salary data, zero values are dropped automatically.[47] While regressing on a leveled salary variable, we manually drop these. It is unlikely that any CEOs work for free, however many companies do not disclose CEO salaries. Additionally, as many as 173 out of 819 stated salaries are zero. Paired with a few missing observations in determinant variables, the sample size is thus reduced to 595. Below is a figure of the salary distribution in year –3.

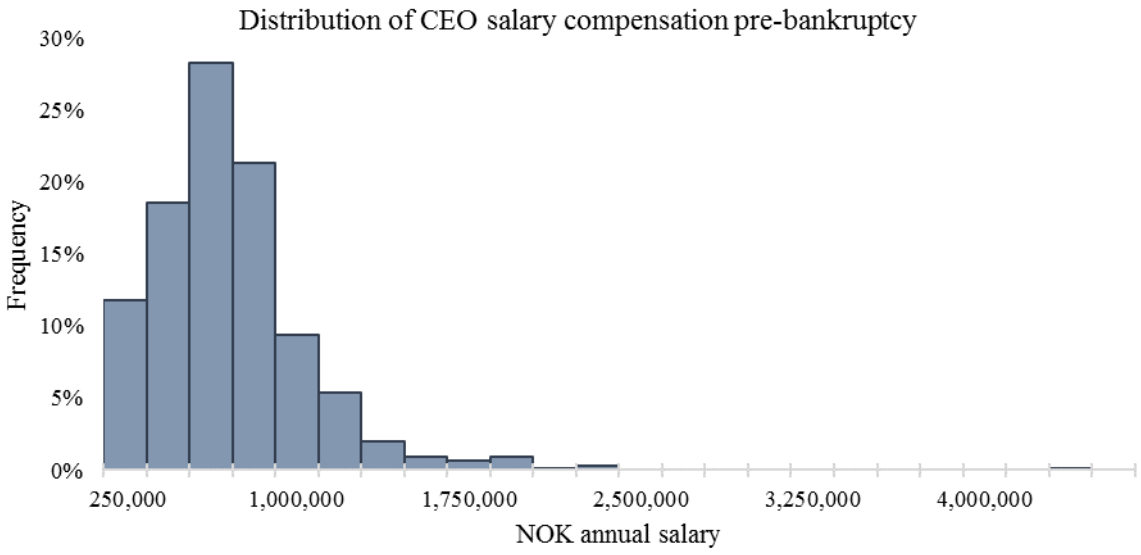

Figure 1 Distribution of salary compensation for CEOs in year -3

[46] Model 2 suffer from heteroscedasticity. The coefficients from OLS regression where heteroscedasticity is present are therefore inefficient but remain unbiased.

[47] The natural logarithm of zero is undefined and is such dropped by any statistical program.

We regressed both models with all CEO- and firm characteristics. The models are similar except for the above-mentioned log-transformation of the dependent variable and thus the interpretation of coefficients are different for the two models.

6.4.4 Results

CEO compensation pre-bankruptcy statistics

Before bankruptcy, all sample salary data is for CEOs, while after bankruptcy the same sample have more varied employment. We have compiled pre-bankruptcy information into summary statistics followed by a model trying to capture the effects of CEO compensation. Below is a table that shows various statistics for salary in the three years leading up to bankruptcy, for all CEOs, for incumbents and finally for replacements.

	N	Mean	Standard deviation	Min	Median	Max
All						
Salary -3	592	642,828	383,708	2,251	587,698	3,420,279
Salary -2	646	644,974	420,453	4,371	584,374	4,873,453
Salary -1	74	551,731	348,714	6,753	532,606	2,352,015
Incumbent						
Salary -3	592	642,828	383,708	2,251	587,698	3,420,279
Salary -2	547	635,871	383,821	4,371	580,763	2,461,488
Salary -1	50	540,047	276,208	28,411	571,027	1,514,058
Replacement						
Salary -3	0					
Salary -2	99	695,273	582,849	27,012	602,093	4,873,453
Salary -1	24	576,073	471,704	6,753	463,078	2,352,015

[1] All figures are displayed in 2015 NOK.

Table 10 Pre-bankruptcy compensation statistics

Between year -3 and year -2 there is no particular change in salary for the CEOs. In the last year before bankruptcy however, the median salary drops by about NOK 50 thousand (or 9%) for both groups. This reduction in median salary is likely due to increasingly distressed firms. The difference is significant on a 5% level, but in terms of the total costs of bankruptcy, NOK 50 thousand is small. The incumbent sample is more stationary from year -2 to year -1.[48] Therefore, looking at incumbent only form a better proxy for salary reductions. This amounts to NOK 10 thousand (-2%). In general, the costs from pre-bankruptcy salary reductions are negligible, contrary to what was states in hypothesis 5.

Further, this effect is stronger for replacements than for incumbents. A logical explanation for this abrupt drop is that a large portion of the replacement CEOs are new in year -1 (46%). Thus, they must likely accept very spares salary compensations due to the firms' financial

[48] Only 8 of 664 Incumbents are new in year -1. Changes in salary from year -2 is therefore mostly for the same observations.

state.[49] Figure 2 illustrates the development in salary in the years preceding bankruptcy, including the abrupt change for replacement CEOs.

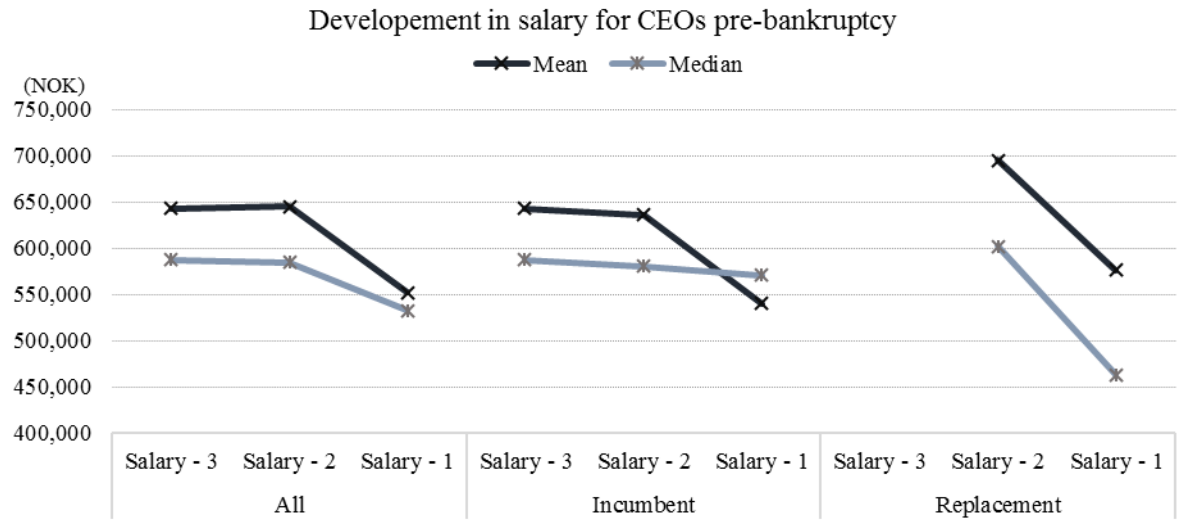

Figure 2 Development in pre-bankruptcy CEO compensation

[49] In year -1 there are 134 new CEOs (41 replace other replacement CEOs while 93 replace incumbent CEOs) out of a total of 289 Replacement CEOs in year -1, this leaves the "new share" of replacement CEOs at 46%.

Determinants of CEO pre-bankruptcy compensation

Presented below, in Table 11, we have two models on pre-bankruptcy CEO compensation. In the first column, the dependent variable of pre-bankruptcy compensation is log-transformed due to a better distribution-fit, as described in the methodology.[50] The rightmost column is similar but with a non-transformed dependent variable.

(Salary pre-bankruptcy)	Log of salary compensation	Salary compensation in tNOK
Variable[1]	(Model 1)	(Model 2)
CEO characteristics		
Age	0.005*	2.010
	[0.003]	[1.320]
Incumbent	-0.057	-37.476
	[0.058]	[40.324]
Chairman	0.018	-16.463
	[0.060]	[27.413]
Firm characteristics		
High-margin industry	0.151**	26.612
	[0.059]	[28.593]
Industry-adj. ROA	-0.168***	-48.378*
	[0.048]	[27.251]
Industry-adj. leverage	-0.161***	-32.539*
	[0.044]	[17.676]
Cash	0.037	133.452
	[0.220]	[108.659]
Tangibility	0.012	183.500*
	[0.130]	[103.777]
Trade credit	0.065	61.123*
	[0.062]	[36.032]
Size	0.329***	234.412***
	[0.023]	[27.995]
R-squared	0.344	0.424
Observations	595	595

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 11 Determinants of CEO compensation prior to bankruptcy

Significant CEO-specific determinants for pre-bankruptcy CEO salary is limited to a positive association with age (on a 10% level). We find the *Incumbent* coefficient to be negative, but not significant. As seen in Table 10, replacement CEOs had a higher compensation. However, the standard deviation is too large to get a significant difference. Further, being a chairman has no significant effect.

[50] Log-transformation due to right skewed salary distribution. Residual robustness tests show that log-transformed model do not suffer any form of heteroscedasticity, while this is somewhat present in Model 2.

We are interested to verify or reject hypothesis 6 that firm performance is positively affecting CEO salary. Evidently, salary decreases with leverage ratio, indicating that CEOs are punished for keeping a higher leverage ratio. A high leverage ratio could indicate a worse financial situation. As expected, *Size* is strongly significant with compensation. CEOs of large firms have higher salaries as it usually requires more skill to manage a large firm. This result is consistent with both Norwegian and international research (Stokke & Sand, 2011, Rose & Shepard, 1997). Additionally, if the firm operates in a high-margin industry, compensation is significantly higher. Possible explanations could be that these firms are more optimistic about the future or simply share the margins. The most unexpected outcome is that CEO compensation decreases with *Industry-adjusted ROA,* thus contradicting hypothesis 6.

Discussion about Industry-adjusted ROA

Initially the industry-adjusted ROA coefficient surprised us. Therefore, we tested different years, sub-samples and other theories. However, all attempts ended with the same result, a negative coefficient with various, but always significant results. A possible explanation is that CEOs in firms under-performing and are close to bankruptcy might utilize their influence to attain a higher compensation before the firm is liquidated and proceeds are distributed to creditors. In many cases, it seems likely to believe that CEOs of firms performing relatively well do not anticipate a bankruptcy to the same extent and act accordingly. Before concluding this, we tested several other possible theories.

One possible theory was that the CEO compensation is a lagged effect of the previous year's performance. Hence, we tried a model with ROA from the year before by regressing year -3 ROA on year -2 salary. This resulted in essentially the same outcome. Another test was to implement a variable of change in ROA between year -3 and year -2. This could possibly explain that the relative growth of ROA is more important for CEO compensation. However, the coefficient was insignificant and resulted in a loss of explanatory power for the model. Further, we exchanged industry-adjusted with unadjusted ROA in the model. Regressing industry-unadjusted ROA resulted in a stronger negative association with salary. Last, as a general test for CEO compensation, we compared the result from our sample with a control group of solvent firms. As such, we filtered a sample of similar companies.[51] Looking at

[51] (Brønnøysundregistrene, 2016) - Solvent firms with employees more than 10 and total sales NOK 3 million.

ROA, no significant relationship between this variable and CEO compensation was present. This control model can be found in the appendices.[52]

Education

Education as one of the CEO characteristic, was not included. Originally, we intended to include education as it is significant and positively correlated with CEO compensation. However, as we only have educational data on 262 individuals, this combined with other missing variables resulted in 80% lost observations. The model is provided in the appendices and show how education affects CEO compensation.[53] In absolute terms, the coefficient is significant with a 5% probability and for each additional year of education the subject is compensated with about NOK 45 thousand annually.

Sub-conclusion

To sum up, personal costs in terms of pre-bankruptcy salary reductions only occur in the last year before bankruptcy. Measurably, the average compensation reduction of NOK 50 thousand (or 9%) is small and unlikely to have a significant effect on CEO hedging behavior.

In regards to determinants, compensation is positively associated with the size of the firm. Higher leverage decreases compensation for the CEO while a lower ROA increases CEO compensation, the latter contrasting with previous research and hypothesis 6. In addition, CEO pre-bankruptcy compensation increases with education. If the firm is in a high-margin industry, compensations tends to be higher.

[52] The outcome of the control group model can be found in appendix 10.4.2, Table 22.

[53] Table on CEO compensation model including educational variable, can be found in the appendix 10.4.4, Table 23.

6.5 CEOs' compensation change following bankruptcy

6.5.1 Introduction

This section investigates the financial loss imposed on CEOs after he or she leaves the bankrupt firm. More specifically, we address the difference between pre- and post-bankruptcy salaries for our sample CEOs.[54] Further, Eckbo et al. (2016) found that the compensation change in the U.S. was substantial for CEOs leaving the executive labor market. Moreover, Eckbo and Thorburn (2003) found the compensation loss to be considerable for CEOs in firms filing for bankruptcy in Sweden. Furthermore, we examine potential differences between incumbent- and replacement CEOs. Lastly, we assess determinants of compensation change conditional on new employment. As aforementioned, research regarding post-bankruptcy outcomes are sparse, thus we only compare our results with Eckbo and Thorburn (2003) and Eckbo et al. (2016).

6.5.2 Hypotheses

7. *CEOs not maintaining an executive position are likely to suffer a compensation loss.*

It is logical to expect that the CEOs leaving the executive labor market are given less responsibility in their post-bankruptcy employment. As such, they are likely to receive less compensation. The hypothesis originates from Eckbo et al. (2016). Applying a similar hypothesis provides us with a foundation for comparison.

8. *Incumbent CEOs are likely to suffer a greater post-bankruptcy compensation loss than replacement CEOs.*

Incumbent CEOs have a longer presence in the firms leading up to financial distress. Consequently, they are more likely to be held accountable for the financial distress and thus suffer greater costs. For comparison, Eckbo et al. (2016) found this hypothesis to be true.

[54] The procedure for estimating compensation change is outlined in appendix 10.6.1, Table 25.

6.5.3 Methodology

OLS regression and log-transformation

In this section, we use pre- and post-bankruptcy compensation data in combination with CEO- and firm-specific characteristics to identify determinants of the compensation change. We provide twelve different OLS regressions with various dependent variables and different sample selections. As earlier, we apply robust standard errors to cope with potential heteroskedasticity problems.

Non-parametric tests

From the salary statistics, it is evident that the medians and means are significantly different. Hence, we cannot apply statistical tests that require normal distribution when comparing medians. As aforementioned, we assess median salary to reduce outliers. Consequently, we chose to apply a Wilcoxon rank-sum test when assessing differences in median salary changes between incumbents and replacements.[55]

Net present value calculation

We include net present value as a measure of compensation loss. For these calculations, we apply a 10% discount rate which represents the riskiness of future salaries.[56] The time horizon for the present value calculation is set from the year of bankruptcy until an assumed retirement age of 65.[57] The net present value is representable for the total compensation loss over time as a consequence of bankruptcy. Further, we apply a relative measure for the present value change noted as present value multiple (net present value divided by salary prior to bankruptcy).

Sample

We analyze a sample comprising of 367 observations in which 91 attain a new executive position while 276 does not. We have dropped a substantial number of observations. The reason being, pre- or post-bankruptcy salaries are unknown, we lack information on new

[55] The Wilcoxon rank-sum test do not assume normal distribution.

[56] Salaries are assumed to carry the same risk as the firms. We apply the risk-free rate plus risk premium at 10%.

[57] The average retirement age in Norway is 65 years (Dahle, 2009).

employment, retirees and dead are excluded, and CEOs with lower post-bankruptcy salary than the average tax deductions are omitted.[58]

[58] For the present value calculation, CEOs aged 65 or more in 2015 are excluded. We calculate PV for everyone until a set retirement age of 65.

6.5.4 Results

CEO compensation change statistics

The tables below display various statistics from our compensation change analysis. In addition, we have displayed the frequencies of compensation changes graphically in the appendices.[59] Table 12 distinguishes between all CEOs, CEOs maintaining an executive positions and CEOs leaving the executive labor market.

	N	Pre-bankruptcy	Post-bankruptcy	Change	PV loss	PV multiple
All CEOs	541	584,374	529,029	-12%	-444,189	-0.7
Executives	128	697,181	704,558	7%	172,444	0.5
Non-executives	413	582,424	475,301	-16%	-535,930	-1.0

Table 12 Key statistics on CEO compensation change

Further, in Table 13, we have compiled statistics were we also distinguish between incumbent- and replacement CEOs. Furthermore, it displays the median compensation change in terms of absolute figures and percentages. Also, it displays present value of the lifetime loss in terms of absolute figures and as a multiple of pre-bankruptcy compensation.

		Median compensation change		Median PV compensation change	
	N	tNOK	Percent	tNOK	Multiple
Sample	(1)	(2)	(3)	(4)	(5)
All CEOs					
Incumbent CEOs	289	-77.2*	-14%	-521.8	-1.0
Replacement CEOs	113	-46.4	-7%	-257.6	-0.5
		(0.292)	(0.176)	(0.261)	(0.176)
CEOs maintaining executive position					
Incumbent CEOs	72	30.1	6%	169.3	0.3
Replacement CEOs	23	100.5	36%	824.5**	1.9
		(0.172)	(0.010)	(0.130)	(0.088)
CEOs leaving the executive labor market					
Incumbent CEOs	217	-97.8*	-18%	-634.0	-1.2
Replacement CEOs	90	-79.4**	-10%	-414.9*	-0.5
		(0.330)	(0.222)	(0.345)	(0.238)

P-values from Wilcoxon sum-rank test are shown in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 13 Median CEO compensation change around bankruptcy

[59] The frequency of income changes can be seen in appendix 10.6.2.

Compensation change for all CEOs

In the first row, Table 13 displays CEOs regardless of their new employment situation. From column 2 and 3, it is evident that they suffered an average compensation loss of NOK 55.4 thousand (12%). This is substantially lower than the 47% found by Eckbo and Thorburn (2003). Further, as evident from column 2 in Table 13, the incumbents had a compensation loss of NOK 77.2 thousand (14%) which is weakly significant. Moreover, for the replacements, the median compensation loss is NOK 46.4 thousand (7%), but not significant. We consider it unlikely for CEOs to hedge against bankruptcy costs this small.

Compensation change for CEOs maintaining executive employment

With respect to the CEOs that attain a new executive position, we observe no significant compensation losses for incumbents nor replacements. Rather, we identify a significant positive compensation change for replacements (column 4 in Table 13). Conditional on being a replacement CEO, the present value of compensation change amounts to NOK 824.5 thousand. A logical explanation is that replacement CEOs typically accede after the companies are under financial distress and are thus not considered responsible for the bankruptcy.

Further, from column 3 in Table 13, it is evident that incumbent- and replacement CEOs only have a significantly different percentage compensation change on a 10% level. In comparison, Eckbo et al. (2016) found the corresponding difference to be significant on a 5% level. Hence, the distinction between incumbent- and replacement CEOs are seemingly not as present in Norway as in the U.S. Later in this chapter, we will discuss this further and control for other determinants.

Compensation change for CEOs leaving the executive labor market

From Table 12, column 5, it is evident that the lifetime compensation loss for CEOs leaving the executive labor market amounts to NOK 535.9 thousand. This is substantially lower than the USD 7 million found by Eckbo et al. (2016). A logical explanation is the small firms of our sample and thus lower compensation for CEOs prior to bankruptcy. Another possible reason for this difference is the small income inequality in Norway.

Further, in column 2 in Table 13, when we separate incumbent- and replacement CEOs, it is evident that the compensation loss for CEOs leaving the executive labor market is significant in absolute terms. This result confirms hypothesis 7. Furthermore, Table 13 (column 2) shows that the incumbent- and replacement CEOs have compensation losses amounting to

NOK 97.8 thousand and NOK 79.4 thousand, respectively. The financial loss is small relative to compensation prior to bankruptcy and the USD 1.6 and 1.2 million found by Eckbo et al. (2016).

In sum, it is evident that the compensation loss is largely determined by whether a CEO maintains an executive position. This in line with hypothesis 7. However, the costs are small compared to previous research and in absolute terms. We argue that none of these costs are sufficient to incentivize hedging behavior.

Determinants of compensation change for executives

With respect to CEOs that maintain executive employment, we study whether any determinants affect the financial loss that occurs post-bankruptcy. Table 14 displays the median compensation change (percentage and PV multiple) as the dependent variables. Eckbo et al. (2016) found none of these determinants to be significant, except for *Incumbent*.

(Compensation change)	Relative compensation chang			Present value multiple		
Variables[1]	(1)	(2)	(3)	(4)	(5)	(6)
CEO characteristics						
Age	0.047*	0.043*	0.0425*	0.238	0.227	0.227
	[0.028]	[0.026]	[0.025]	[0.190]	[0.176]	[0.177]
Incumbent	-0.073	-0.078		-1.213	-1.896	
	[0.403]	[0.484]		[2.688]	[3.135]	
Chairman	-0.286	-0.349	-0.368	-1.396	-1.705	-2.142
	[0.447]	[0.518]	[0.443]	[2.849]	[3.227]	[2.841]
Firm characteristics						
High-margin industry		-0.642	-0.650		-3.237	-3.372
		[0.519]	[0.487]		[2.776]	[2.680]
Industry-adj. ROA		0.371	0.365		2.743	2.631
		[0.522]	[0.527]		[3.982]	[3.995]
Industry-adj. Leverage		0.780*	0.769*		7.815**	7.560*
		[0.452]	[0.455]		[3.854]	[3.859]
Cash		0.677	0.677		3.404	3.550
		[1.173]	[1.184]		[8.217]	[8.584]
Tangibility		0.364	0.349		2.787	2.531
		[1.130]	[1.089]		[6.956]	[6.858]
Trade credit		0.162	0.157		0.472	0.305
		[0.369]	[0.377]		[2.512]	[2.559]
Size		0.0970	0.096		0.572	0.568
		[0.135]	[0.137]		[0.902]	[0.936]
Observations	95	87	87	92	84	84
R-squared	0.051	0.137	0.136	0.030	0.176	0.171

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 14 Determinants of the compensation change for CEOs maintaining executive employment

The models in Table 14 indicate that the distinction between incumbent- and replacement CEOs is no longer significant on any level when controlling for other factors. Hence, we cannot confirm hypothesis 8. This is unexpected as incumbents have been managing the company for a longer period when approaching bankruptcy and are thus more likely to be held responsible for the bankruptcy. Consequently, firms might question their skillset and are less likely to pay high salaries. The distinction between incumbents and replacements are particularly relevant for executives, as these are subjected to a more thorough background research upon hiring. In addition, Eckbo et al. (2016) found the incumbents to suffer a

greater compensation loss even when controlling for other determinants. The lack of significance in these models might be a consequence of the small sample sizes.

Further, the output indicates that *Age* is negatively associated with compensation loss (10% level). A logical explanation is that older CEOs are in general more experienced and thus attractive in the executive labor market. Also, we find *Industry-adjusted leverage* to be negatively associated with compensation loss.

Determinants of compensation change for non-executives

We know that CEOs leaving the executive labor market suffer a lifetime compensation loss of NOK 535.9 thousand. In this sub-section, we seek to address whether any determinants affect this compensation loss. Also, we assess whether incumbent- and replacement CEOs have different compensation losses when controlling for other variables. The compensation change is measured in fraction of old income and as a present value multiple.

(Compensation change)	Relative compensation change			Present value multiple		
Variables[1]	(1)	(2)	(3)	(4)	(5)	(6)
CEO characteristics						
Age	-0.028***	-0.021**	-0.021**	-0.245***	-0.209**	-0.207**
	[0.008]	[0.011]	[0.011]	[0.077]	[0.095]	[0.094]
Incumbent	0.279*	0.0824		2.400*	0.715	
	[0.154]	[0.149]		[1.278]	[1.224]	
Chairman	0.125	-0.147	-0.125	1.349	-0.822	-0.639
	[0.250]	[0.197]	[0.188]	[2.163]	[1.688]	[1.634]
Firm characteristics						
High-margin industry		0.0721	0.0649		0.738	0.676
		[0.236]	[0.233]		[1.974]	[1.952]
Industry-adj. ROA		0.712***	0.721***		5.723***	5.798***
		[0.234]	[0.228]		[1.837]	[1.798]
Industry-adj. Leverage		0.0757	0.074		0.729	0.715
		[0.134]	[0.135]		[1.058]	[1.060]
Cash		-0.450	-0.432		-3.845	-3.690
		[0.934]	[0.937]		[8.164]	[8.177]
Tangibility		-0.0649	-0.083		-1.740	-1.891
		[0.418]	[0.415]		[3.266]	[3.263]
Trade credit		-0.151	-0.163		-1.964	-2.072
		[0.261]	[0.267]		[2.080]	[2.141]
Size		-0.455**	-0.457**		-3.699**	-3.717**
		[0.201]	[0.202]		[1.599]	[1.607]
Observations	307	261	261	304	259	259
R-squared	0.032	0.166	0.165	0.035	0.162	0.161

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 15 Determinants of the compensation change for CEOs leaving the executive labor market

As with executives, it is evident that incumbent CEOs do not suffer a greater compensation loss than replacement CEOs. Surprisingly, the incumbent CEOs seem to have a lower compensation loss, but the effect is only weakly significant. When controlling for firm-specific variables, the difference is insignificant. Hence, we cannot confirm hypothesis 8.

Further, the models suggest that age significantly increases the compensation loss for CEOs leaving the executive labor market. A logical interpretation is that older people are less attractive in the non-executive labor market.

Amongst the firm-specific variables, size has a significantly negative effect on compensation. CEOs in larger companies have more responsibility and typically higher compensation prior to bankruptcy. Consequently, they have more downside when leaving the executive labor market. Further, higher industry-adjusted ROA prior to bankruptcy is associated with a lower compensation loss. As such, CEOs performing well prior to bankruptcy are likely to be more attractive in the labor market and rewarded with higher compensation in their new employment.

Sub-conclusion

We find that CEOs attaining a new executive position have no significant compensation loss. CEOs leaving the executive labor market, on the other hand, face a compensation loss amounting to NOK 535.9 thousand over their lifetime. Compared to the USD 7 million found by Eckbo et al. (2016), this is very small. A logical explanation is the small firm size of our sample and thus lower compensation for CEOs prior to bankruptcy. Another possible reason for this difference is small income inequalities in Norway. Further, we do not identify a greater financial loss for incumbent CEOs than replacement CEOs, regardless of their new employment. In general, we argue that the post-bankruptcy compensation losses are too small to affect CEO hedging incentives in any manner.

7. Weaknesses of this thesis

Throughout this paper, it was necessary to make assumptions and do some simplifications given the circumstances. We had a restricted time frame for preparing the paper and the data was limited. Below, we have listed the most important weaknesses of our thesis.

Large differences in firm size

We only included firms with more than 10 employees pre-bankruptcy. However, some firms are very small in terms of sales and/or assets. As such, CEOs of these firms have limited responsibility compared with CEOs of large firms, but are still treated equal.

Education was only accessible for a small part of the sample

Further, education was only accessible for a small part of the sample. As such, we were not able to include education as an explanatory variable in our models. A solution to this problem would be to increase the sample size by widening the time horizon for bankruptcies.

Extracting all post-bankruptcy information from 2015

Another weakness is the usage of post-bankruptcy salaries and employment information for all CEOs from the year 2015. As such, we measure the compensation change over a longer time horizon for the ones that are bankrupt in 2009 compared with 2013. Hence, the CEOs from firms that went bankrupt early have more time to regain lost salary and status compared to the CEOs in firms that went bankrupt later.

Excluding severance pay and equity loss

Also, we have not included severance pay or equity ownership in the bankrupt firm as this information is not accessible for Norwegian CEOs in private companies. These can be quite substantial and account for a large part of CEOs´ costs of bankruptcies. This is particularly relevant for owner-CEOs.

Compare taxable income with salary from financial accounts

Another weakness is obtaining post-bankruptcy salary from tax rolls. These figures also include non-salary taxable income. For example, taxable gains and board remunerations do appear in taxable income but not in accounts figures.[60] Alternatively, we could have obtained

[60] Taxable gains are included in tax rolls. It comprises all non-salary gains e.g. profit from sales of real estate, stocks, bonds etc.

pre-bankruptcy salaries from tax rolls. However, this information is not available until spring 2017. Another alternative, which we pursued, is to estimate a proxy for post-bankruptcy salary. The method is outlined in the appendices.[61] For reasons elaborated below, we chose not to include this method. The procedure is outlined below.

First, we estimated industry proxies for post-bankruptcy salary for the ones attaining a new CEO position. As such, we obtained CEOs' salaries from financial accounts in a selection of solvent firms.[62] Further, these proxy salaries were attributed to CEOs by applying different industry codes.[63] Hence, all CEOs within one industry were given the same salary after bankruptcy.

Second, we estimated a proxy for CEOs not maintaining executive employment. We calculated the median difference between the salaries obtained from financial accounts and tax rolls for the executives. Further we added this difference to post-bankruptcy tax rolls for the non-executives which gave us a proxy for post-bankruptcy accounts salaries for all CEOs. As a result, our estimated median post-bankruptcy salaries for executives and non-executives were NOK 657 thousand and NOK 500 thousand, respectively.

Using this approach, we lost valuable information on variance. Moreover, in our estimate of industry proxies we assumed that executives had an industry average salary and were not affected by the bankruptcy, which is unlikely. In addition, the proxy for non-executives was highly reliant on the proxy for executives. As such, we chose not to proceed with this approach.

Last, we produced a regression on the difference between salaries obtained from financial accounts and tax rolls for the ones not attaining a new CEO position. We tried to apply this regression for estimating salary for non-executives. However, the regression had very limited explanatory power and no significant coefficients. Consequently, the estimated salary for all non-executives was the intercept. As such, we choose not to proceed with this approach either.

[61] Post-bankruptcy estimations can be found in Table 25 and Table 26 in the appendix 10.6.1.

[62] Using the ten industry categories and solvent Norwegian firms with sales above NOK 3 million.

[63] Standard Industrial Classification (SN2002).

8. Conclusion

In this study, we provide the first empirical research on the matter of personal costs of bankruptcy in the Norwegian labor market. We question whether the labor market penalizes CEOs involved in bankruptcy. We compare personal costs of bankruptcy in our study with previous research. Over one thousand individual CEOs working in more than one thousand firms form the sample behind this paper.

This thesis complements similar research that exists in Sweden and the U.S. in several ways: Using a Norwegian sample, the most distinctive difference is the bankruptcy legislation. Under Norwegian legislation, all bankrupt companies cease to exist. In both Sweden and the U.S. however, firms can continue as a going-concern and sustain their business. Moreover, most large restructurings in Norway are settled in out-of-court negotiations and not registered. Consequently, the sample comprises mostly small sized firms. Lastly, income inequality is low in Norway compared to the U.S. These distinctions can also explain differing outcomes between our study and previous research.

We examining CEOs personal costs of bankruptcy in four forms: First, CEO turnover incurs a personal cost in terms of reputational damage. Second, those leaving the executive labor market suffer costs in terms of lower status. Third, the financial loss imposed on the CEOs through salary reductions prior to bankruptcy. Fourth, compensation costs for CEOs that occurs after bankruptcy.

In our sample, 14% of the CEOs were replaced in a year on average. Thus, the personal cost of reputation loss is lower than observed in other countries (e.g. 30 - 50% in the U.S.). As predicted, turnover is significantly higher amongst incumbents and negatively associated with chairmanship. Unexpectedly, only CEOs in high-margin industries are affected by firm-specific characteristics.

Following bankruptcy, only 20% of the sample maintains an executive position, a share lower than comparable research. Consequently, 80% of the sample leaves the executive labor market. Among these, a few become independent/consultants (7%), while the vast majority take up regular employment (73%). Replacements are just as likely to leave the executive market as incumbent CEOs. As anticipated, the likelihood of leaving the executive labor

market increases with age and decreases with firm size. Finally, we did not observe any firm performance effect on employment outcome.

A characteristic of pre-bankruptcy compensation is the decline of NOK 50 thousand in salary the last year prior to bankruptcy, reflecting firms' progressively distressed situation. Further, our empirical research supports other findings on the importance of firm characteristics for compensation as a better indicator than CEO characteristics. More, compensation increases with size and is higher in high-margin industries. Also, high leverage compared to peers are negatively associated with compensation. Last, we found higher industry-adjusted ROA to decrease compensation, indicating that bad performing firms pay CEOs more. This could imply that CEOs close to bankruptcy might utilize their influence to attain a higher compensation before the firm is liquidated and proceeds are distributed to creditors.

After bankruptcy, we find that CEOs maintaining executive employment have no compensation loss. In contrast, non-executives, face a lifetime compensation loss amounting to NOK 535.9 thousand. This is very small compared to the USD 7 million found by Eckbo et al. (2016) in the U.S. In total, all CEOs suffer on average a compensation loss of 12% compared to 47% found by Eckbo and Thorburn (2003) in Sweden. Also, we do not identify any greater financial losses for incumbents than replacements, regardless of their new employment.

In sum, Norwegian CEOs seem to only attain minor financial costs of bankruptcy in terms of absolute amounts and compared to previous research. Moreover, the turnover rate is low compared to previous studies. Lastly, the share of new executives is lower than reported in other countries. However, the small compensation difference between CEOs and others can result in lost incentives to pursue this career. Also, CEO status in small sized firms are arguably less important.

We argue that CEOs´ personal costs of bankruptcy in Norway are not sufficient to explain the hedging behavior observed in other countries. Further, the substantial differences from personal costs identified in research abroad makes it hard to draw inference from the previous research on hedging behavior. In total, there are no empirical evidence to support conflicting interests of management and stakeholders in terms of CEO bankruptcy hedging.

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10. Appendicies

This chapter comprises supplementary research for the chapters; five (Data) and six (Empirical analyses and results). The appendices are structured similarly to the main chapters, from variable definitions to the compensation change analyses.

10.1 Appendix A: Variables definition and data statistics

10.1.1 Variables description

Table 16 defines variables and their sources applied in the analyses of CEOs' personal costs of bankruptcy. The sample comprises 1,446 CEOs in 1,023 Norwegian firms with at least 10 employees pre-bankruptcy, declaring bankruptcy in the period 2009-2013. Most of the data material is provided by the Brønnøysund Register Center.

Variable name	**Definition**	**Source**
Age	CEO age in years at the time of bankruptcy	Brønnøysund Register Centre
Chairman	A dummy indicating that the CEO is also a chairman of the board	Brønnøysund Register Centre
Incumbent	A dummy indicating if a CEO was the first in our sample	Brønnøysund Register Centre
Replacement	A dummy indicating a CEO replacing another CEO	Brønnøysund Register Centre
Replaced	A dummy indicating whether a CEO has been replaced within the four-year time frame	Brønnøysund Register Centre
Education	CEO's education in number of years	Social media and Wikipedia
Salary -1	CEO's compensation one year prior to bankruptcy (2015 adjusted)	Brønnøysund Register Centre
Salary -2	CEO's compensation two years prior to bankruptcy (2015	Brønnøysund

	adjusted)	Register Centre
Salary -3	CEO's compensation three years prior to bankruptcy (2015 adjusted)	Brønnøysund Register Centre
Salary2015	Taxable income in 2015 measured in 2015 NOK	Norwegian tax administration
Compensation change	Difference between taxable income in 2015 and compensation in year -3, -2 or -1	
Size	Log of total sales in NOK thousands	Brønnøysund Register Centre
Industry-adjusted ROA	Defined as EBITDA (earnings before interest, taxes, depreciation and amortization) over total assets, adjusted for the median for firms in the same industry	Brønnøysund Register Centre
Industry-adjusted leverage	Leverage ratio ("leverage") defined as total liabilities over total assets, adjusted for the median for firms in the same industry	Brønnøysund Register Centre
Cash	Ratio of cash to book assets	Brønnøysund Register Centre
Trade credit	Dummy indicating if non-interest bearing liabilities to total liabilities are at least two-thirds	Brønnøysund Register Centre
High-margin industry	Dummy indicating whether the sample firm operates within a strong industry that year (return of assets larger than 5%)	Brønnøysund Register Centre
Tangibility	Ratio of net property, plant and equipment to book assets	Brønnøysund Register Centre
Executive	Dummy indicating whether a CEO maintain an executive position after bankruptcy	Brønnøysund Register Centre, Proff

Table 16 Definitions of variables used in the analysis of CEO personal costs of bankruptcy

10.1.2 Variables summary

Below we present statistics describing most variables from the data. For the CEO characteristics, statistics are from year 0, apart from those who were replaced. The firm characteristics are measured at the corresponding year for each CEO. Again, replaced CEOs are matched with data from the year-end before replacement. The sample contains 1,023 Norwegian firms bankrupt between 2009 and 2013 and the 1,446 involved CEOs. All variables are defined in Table 16.

Pre-bankrupt statistics	*N*	Mean	Standard deviation	Min	Median	Max
All CEOs						
Age	1,390	46.5	10.1	21.0	46.0	78.0
Incumbent	1,446	0.71	0.46	0	1	1
Chairman	1,446	0.32	0.47	0	0	1
Before	1,446	0.21	0.41	0	0	1
Replaced	1,446	0.29	0.46	0	0	1
Education	262	2.34	1.98	0	3	8
Incumbent CEOs	1,023					
Age	1,006	47.2	10.2	24.0	47.0	78.0
Chairman	1,023	0.35	0.48	0	0	1
Before	1,023	0.21	0.41	0	0	1
Replaced	1,023	0.35	0.48	0	0	1
Education	171	2.26	2.02	0	3	8
Replacement CEOs	423					
Age	384	44.6	9.7	21.0	45.0	72.0
Chairman	422	0.23	0.42	0	0	1
Before	423	0.21	0.40	0	0	1
Replaced	423	0.15	0.36	0	0	1
Education	91	2.48	1.92	0	3	6
CEO compensation pre bankruptcy[1,2]						
All	819	644,974	420,453	4,371	584,374	4,873,453
Incumbents	698	653,871	383,821	4,371	580,763	2,461,488
Replacements	121	695,273	582,849	27,012	602,093	4,873,453
Sample firm characteristics						
Size	768	9.62	1.18	4.74	9.61	15.78
Industry-adjusted ROA	688	-0.27	0.80	-12.17	-0.12	1.55
Industry-adjusted leverage	688	0.53	1.02	-0.74	0.28	11.31
Cash	822	0.13	0.16	-0.56	0.06	0.97
Tangibility	822	0.25	0.24	0.00	0.16	1.00
High-margin industry	825	0.45	0.50	0	0	1

[1]Annuals filled with zero in CEO compensation is excluded from statistics.
[2]We adjust salaries with 3% yearly growth, and all salaries are shown in 2015 value.

Table 17 Summary statistics for variables

10.2 Appendix B: CEO Turnover

10.2.1 Supplementary interpretations on CEO turnover statistics

Table 18 is an overview of CEO turnover leading up to bankruptcy in year 0 from three years prior (year -3). Incumbent CEOs are defined as those stated as CEO in the earliest year of data, year -3, except for those firms established after this point, at which the first CEO is incumbent. Any CEO that replaces another is marked as a replacement CEO. This sample contains 1,023 unique firms that filed for bankruptcy between 2009 and 2013. Some are very short-lived as evident by the *Missing Firm data* statistics, which results in not 'complete' data prior to bankruptcy. In total, there are 1,023 incumbents and 423 replacements. In the end of year -3 there are 889 incumbent CEOs. This gradually decreases as CEOs are fired or leave voluntarily from the distressed firm. All variables are defined in Table 16.

					CEOs who depart		
Event year	Sample Firms	Missing Firm data	Incumbent CEOs	Replacement CEOs	All	Incumbent CEOs	Replacement CEOs
-3	889	134	889				
-2	972	51	825	147	147	147	0
-1	1,015	8	726	289	183	142	41
0	1,023	0	664	359	93	70	23
Net/Total			1,023	423	423	359	64
Rate of replacement (the whole period)						0.35	0.15

Table 18 CEO departures and replacements prior to bankruptcy

10.2.2 CEOs involved in multiple bankruptcies

Figure 3 illustrates the distribution of the number of times CEOs are represented as a bankruptcy CEO. If represented *Before*, this must be in another year (thus with another firm). 302 or 21% of the sample go through more than one bankruptcy between 2009 and 2013.

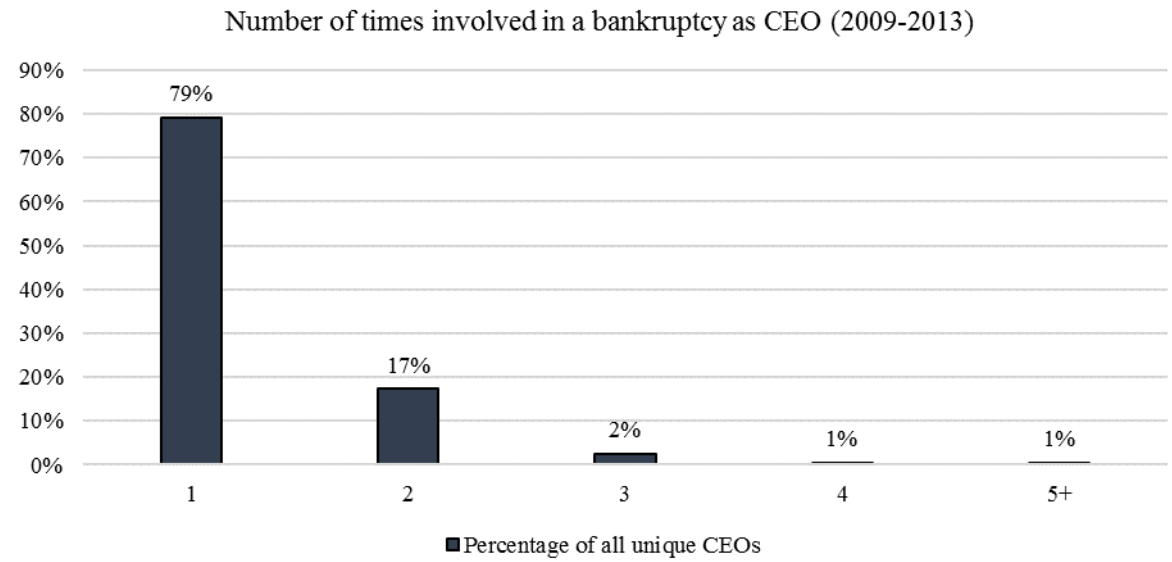

Figure 3 Distribution of times involved in bankruptcy between 2009 and 2013

10.3 Appendix C: New employment and career changes following bankruptcy

10.3.1 Post-bankruptcy employment statistics

Figure 4 illustrates the distribution of employment in all categories (including dead and retired) after bankruptcy. In the top right, the share maintaining an executive position is highlighted.

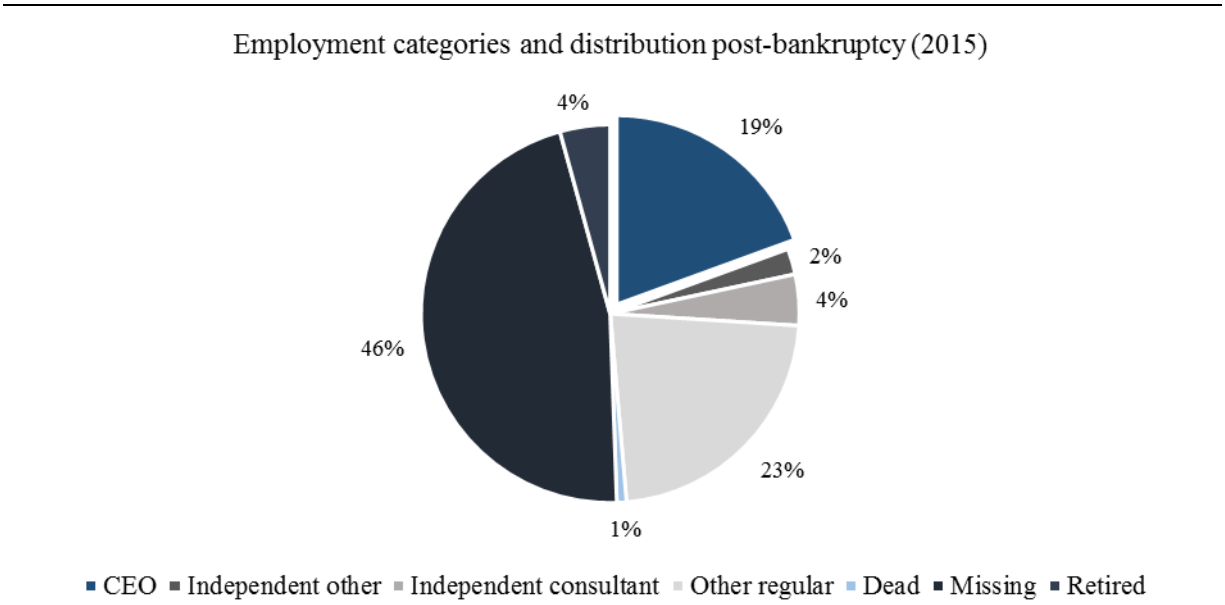

Figure 4 Distribution of post-bankruptcy employment situation

The employment situation illustrated is from 2015, for what was a sample with only CEOs prior to bankruptcy. These CEOs come from sample firms that was declared bankrupt between 2009 and 2013. Thus, the outcome is between two to six years after bankruptcy. Prior to the bankruptcy 100% worked as CEOs, while the percentage drops to 19% after. As the Norwegian accounting law requires all executive positions to be disclosed for the public, the 46% missing population cannot be executives but are rather a regular employee, dead, retired or not working.

Note: the reason why 19% is different from the 20% shown throughout the thesis is due to retired and dead now being included in the percentages.

10.3.2 What industries are represented?

Additionally, we have compiled industry statistics. Below is a table and a figure indicating the migration between industries occurring after bankruptcy. Table 19 tabulates how pre- and post-bankruptcy employment is divided in different industries and between the three employment categories listed. The *All* columns summarize the findings for the whole sample.

	After bankruptcy				Prior
		Executive	Non-executive		
SN2002 groups	All	CEO	Independent	Other	CEO (All)
Frim Sector					
Manufacturing[1]	42	32	2	8	220
Building/Construction[1]	114	86	6	22	316
Shipping	5	3	0	2	3
Health	14	5	3	6	16
Trade	115	73	8	34	374
Real Estate	47	24	14	9	164
Transport	19	11	3	5	32
Culture	11	1	0	10	22
IT/Com	6	3	0	3	29
Finance	8	4	2	2	8
Unknown sector	929	39	57	226	262
Total	1,372[2]	281	95	327	1,446

[1]Manufacturing and Building/Construction sectors were high-margin in the year of firm data (year -2).
[2]Does not include 12 dead and 62 retired.

Table 19 Industry distribution pre- and post-bankruptcy

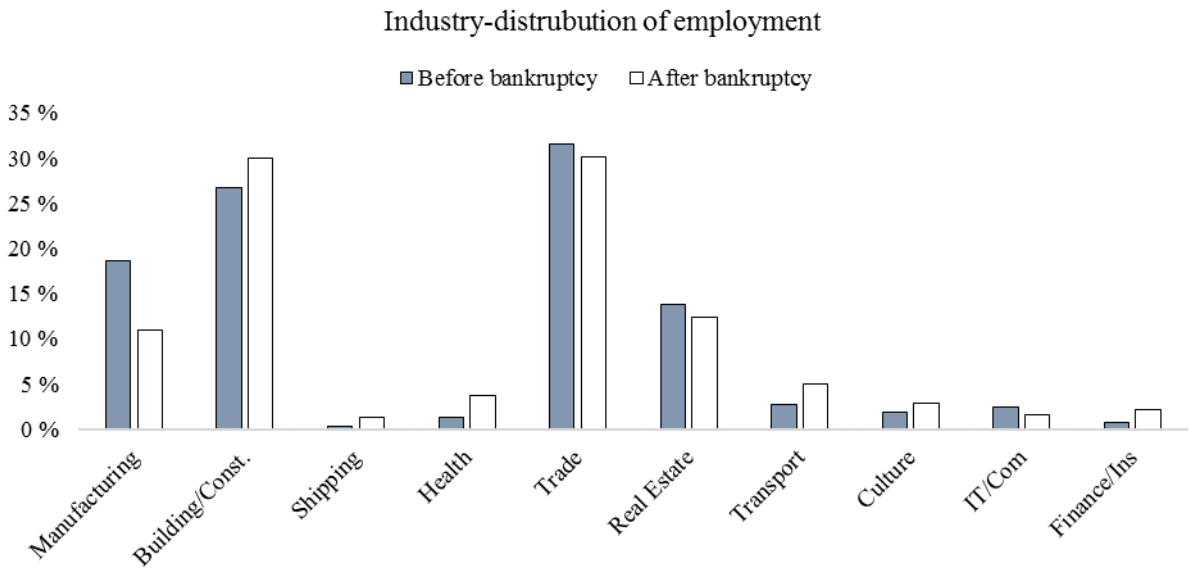

Figure 5 Illustration of industry-distribution before- and after bankruptcy

We identified 381 post-bankruptcy employers' industries from the full sample (compared with 1,184 pre-bankruptcy). Percentagewise, 47% of all observations end up in the same sector as their old firms' sector. Findings in the U.S. had this share close to one-third (Eckbo at al. 2016). This fifty-fifty distribution is the same for those who maintains an executive position and those who do not.

10.3.3 Identifying new employment, incumbent CEOs only (analysis 2)

Incumbents are likely more affected by a firm's bankruptcy due to more involvement in the distressed situation, which is why we perform all analyses on these separately in addition to the full sample. Table 20 presents similar models as the one in section 6.3. For Model 1, there are three outcomes: departure to new executive CEO position (the reference outcome), an independent career (typically your own company for contracting/consulting) and lastly regular employment. All variables are explained in Table 16.

(Employment chance)	Full Sample (Model 1)		Full Sample (Model 2)
Variable[1]	Independent/Consultant	Regular	Non-executive
CEO characteristics			
Age	0.033*	0.030***	0.031***
	[0.019]	[0.011]	[0.00]
Chairman	-0.845**	-0.677***	-0.691***
	[0.415]	[0.229]	[0.229]
Firm characteristics			
High-margin industry	-0.149	-0.208	-0.202
	[0.392]	[0.219]	[0.217]
Industry-adj. ROA	0.001	-0.083	-0.073
	[0.380]	[0.312]	[0.242]
Industry-adj. Leverage	0.306	0.0702	0.101
	[0.227]	[0.201]	[0.184]
Cash	0.355**	0.312***	0.316***
	[0.166]	[0.096]	[0.092]
Tangibility	0.102	0.251	0.238
	[0.837]	[0.493]	[0.502]
Trade credit	-0.259	-0.061	-0.076
	[0.446]	[0.263]	[0.266]
Size	-0.285	-0.382***	-0.373***
	[0.175]	[0.101]	[0.094]
Pseudo R^2	0.057	0.057	0.076
Observations	622	622	622

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 20 Determinants of the probabilities of career outcomes following bankruptcy (incumbents)

Evidently, the outcome is very similar to the full sample in section 6.3. Minor differences in some independent/consultant coefficients are the exception. There is no longer any negatively association with size and leaving for independent employment. On the other hand, it is now a significant and positive association with cash and leaving for independent employment. In total, only negligible differences were expected as the previous models showed no significant difference between incumbent- and replacement CEOs.

10.4 Appendix D: CEO compensation around bankruptcy

10.4.1 Compensation statistics on replaced vs non replaced CEOs

To supplement the sections on pre-bankruptcy salary compensation and compensation change, we provide salary statistics like Table 10 (incumbents versus replacements), but for a comparison between those replaced and those not replaced, including both incumbents and replacements. All variables are defined in Table 16.

	Observations		Median		% Change	
Variables	Replaced	Not Rep.	Replaced	Not Rep.	Replaced	Not Rep.
Salary -3	214	378	595,613	586,554		
Salary -2	180	466	609,370	572,190	2%	-2%
Salary -1	5	69	*na*[1]	517,953		-9%
Salary 2015	251	585	591,749	505,916	-3%[2]	-2%

All values are growth-adjusted and shown in 2015 value
[1]With only five observations, we do not present this median.
[2]Compare to Salary -2.

Table 21 Pre- and post- bankruptcy compensation statistics for replaced and not replaced CEOs

Evidently, replaced CEOs have higher salary both before and after bankruptcy. The difference is more evident post-bankruptcy. As argued, replaced CEOs avoid some attention regarding the bankruptcy and simultaneously have more time to secure new employment with high salary.

10.4.2 Determinants for CEO Pre-bankruptcy compensation, control group (analysis 3)

In Table 22, pre-bankruptcy compensation models on firm characteristics with a control group are presented to the right of the original sample regression. This group is extracted as a random sub-sample with the same firm requirements as the distressed sample, but from solvent Norwegian firms. All models are OLS estimates. All variables are defined in Table 16.

(Salary pre-bankruptcy)	Bankrupt sample	Control group	
	Log of salary compensation	Log of salary	Salary in tNOK
Variable[1]	(Model 1)	(Model 2)	(Model 3)
Firm characteristics			
Industry-adj. ROA	-0.174***	-0.001	-11,845
	[0.052]	[0.162]	[95,466]
Industry-adj. leverage	-0.164***	-0.126	-51,598
	[0.043]	[0.093]	[56,750]
Cash	0.0147	0.276**	159,850*
	[0.222]	[0.125]	[92,997]
Tangibility	0.007	0.140	210,932**
	[0.131]	[0.133]	[105,898]
Trade credit	0.066	-0.030	41,545
	[0.068]	[0.067]	[46,657]
Size	0.338***	0.249**	190,044**
	[0.021]	[0.028]	[17,638]
Adjusted-R^2	0.346	0.177	0.261
Observations	598	700	700

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 22 Determinants of CEO compensation prior to bankruptcy with Control group

To sum up the original results from section 6.4, compensation was negatively associated with *leverage* and *ROA* both industry-adjusted or not, while positively correlated with size. In the control group, there is no significant findings on either ROA or leverage, even though the coefficients are negative. There is however a significant increase with size, like the bankrupt firms. Additionally, cash/assets and tangibility increase CEO compensation.

10.4.3 Educational statistics

Below, in Figure 6, we present an illustration of educational data identified in the sample. We recovered educational information for 247 observations. Zero years of education indicate no further education than high school. The highest degree of education found was PhD. In addition, some CEOs had executive courses (or similar) together with a bachelor- or masters-degree. These are noted as *degree + 1*.

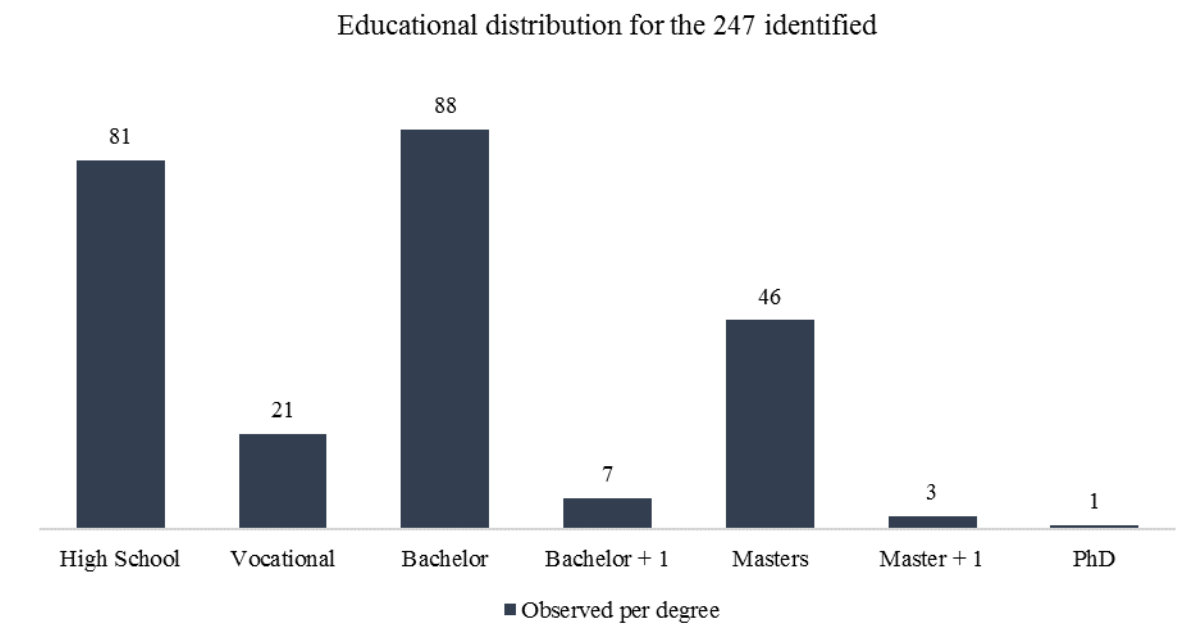

Figure 6 Educational statistics for CEOs

Beware that one should not emphasis on averages or medians on this outcome as it is very likely that the unidentified sample have another educational distribution due to the higher difficulty verifying those with less education, specifically high school-degrees.

10.4.4 Determinants for CEO Pre-bankruptcy compensation, education (analysis 3)

Table 23 includes the results briefly discussed in section 6.4 about education and pre-bankruptcy compensation. We have produced four models, two full models including both CEO- and firm-specific characteristics, for the log-transformed- (1) and levelled salary (3). Additionally, we have included two CEO-specific only models for both log-transformed- and levelled dependent variables, Model 2 and 4 respectively. All variables are defined in Table 16.

(Salary pre-bankruptcy)	Log of salary compensation		Salary compensation in tNOK	
Variable[1]	(Model 1)	(2) CEO	(Model 3)	(4) CEO
CEO characteristics				
Age	0.013**	0.018***	8.507	14.224***
	[0.006]	[0.006]	[5.346]	[4.708]
Incumbent	-0.045	-0.413	27.686	-333.070
	[0.285]	[0.309]	[198.831]	[236.258]
Chairman	0.003	-0.104	-28.302	-110.674*
	[0.095]	[0.108]	[61.068]	[61.715]
Education	0.046**	0.056**	45.442**	57,883**
	[0.022]	[0.024]	[19.818]	[28.850]
Firm characteristics				
High-margin industry	-0.081		-33.685	
	[0.092]		[70.539]	
Industry-adjusted ROA	-0.450***		-333.903***	
	[0.139]		[97.565]	
Industry-adjusted Leverage	-0.184		-61.919	
	[0.116]		[70.427]	
Cash	-0.078		264.595	
	[0.353]		[293.248]	
Tangibility	0.019		596.076*	
	[0.243]		[309.260]	
Trade credit	-0.030		11.757	
	[0.112]		[74.974]	
Size	0.291***		328.419***	
	[0.040]		[91.195]	
Adjusted R^2	0.42	0.12	0.61	0.13
Observations	117	124	117	124

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1]Observed but not included are the intercepts.

Table 23 Determinants of CEO compensation prior to bankruptcy including education

As aforementioned, education significantly increase compensation as evident in these models. Controlling for both CEO- and firm-specific effects, Model 1 captures 42% of all variation in pre-bankruptcy compensation.

10.5 Appendix E: Comprehensive salary statistics

10.5.1 Development in salary for CEOs

Table 24 shows statistics on development in salary compensation for the sample. First, we observe development for the full sample. Second, we divide the CEOs between incumbent- and replacement CEOs. Third, we identify development for those maintaining executive employment and those who do not. All variables are defined in Table 16.

	N	Mean	Standard deviation	Minimum	Median	Maximum
All						
Salary -3	592	555,799	329,858	2,000	509,000	2,781,000
Salary -2	646	570,382	372,762	4,000	522,500	4,330,000
Salary -1	74	496,230	315,397	6,000	482,000	2,217,000
Salary 2015 tax rolls	863	673,971	738,315	105,531	520,029	10,805,992
Incumbents						
Salary –3	592	555,799	329,856	2,000	509,000	2,781,000
Salary –2	547	561,740	340,852	4,000	521,000	2,187,000
Salary –1	50	483,420	239,282	26,000	507,500	1,268,000
Salary 2014[1] tax rolls	592	670,014	771,698	105,531	514,796	10,805,992
Replacements						
Salary –3	0					
Salary –2	99	618,131	514,315	24,000	539,000	4,330,000
Salary –1	24	522,917	438,914	6,000	430,000	2,217,000
Salary 2014[1] tax rolls	244	692,420	561,103	172,117	558,326	3,135,378
Executive post-bankruptcy						
Salary -3	109	655,034	425,307	20,000	573,000	2,781,000
Salary -2	128	671,102	460,681	24,000	617,000	4,330,000
Salary -1	16	603,125	249,755	241,000	549,000	1,268,000
Salary 2015 tax rolls	95	924,102	758,410	105,531	704,558	4,288,221
Non-Executive post-bankruptcy						
Salary - 3	434	548,353	301,204	2,000	509,000	1,983,000
Salary - 2	440	570,323	341,886	4,000	528,000	2,187,000
Salary - 1	50	501,860	324,474	32,000	482,500	2,217,000
Salary 2015 tax rolls	307	596,570	715,693	121,472	475,301	10,805,992

Table 24 Compensation statistics for CEOs around bankruptcies

The median salary for all observations are NOK 509 thousand three years before filing (year -3), followed by NOK 522 thousand (year -2) and NOK 482 thousand in the final year before filing (year -1). Post-bankruptcy, the median salary for the full sample is NOK 527 thousand, which is on par with year -3 and year -2, but higher than year -1. For incumbent CEOs, salaries seem to be stable. While for replacement CEOs salary drops in year -1 and then goes

back to pre-bankruptcy levels. Note however, the replacements sample is small in year -1. Those who stay executives have, in general, a higher salary (around NOK 100 thousand pre-bankruptcy). Evidently, this group does not seem to experience costs of bankruptcy, while the non-executive sample do so.

10.6 Appendix F: compensation change following bankruptcy

10.6.1 Post-bankruptcy compensation methodology

Table 25 and Table 26 summarize the methodologies for estimating the CEOs' post-bankruptcy compensation. Table 25 summarize our procedure for obtaining post-bankruptcy salaries from tax rolls. In this table, we have outlined each type of new employment separately. Further, in Table 26, we have done a corresponding summary for our alternative approach, using a proxy. However, due to aforementioned reasons, we chose to not apply these figures in our calculation of compensation change.

Type of new employment	N	Methodology for estimating income at the new firm
CEO at new firm	281	Compensation at new firm is obtained from tax rolls 2015, the average tax deductions are added
Independent/consultant	95	Compensation at new firm is obtained from tax rolls 2015, the average tax deductions are added
Other (regular)	326	Compensation at new firm is obtained from tax rolls 2015, the average tax deductions are added
Retired	62	Individuals that are over 65 years old are assumed to be retired, unless they maintain executive employment
Missing (regular)	682	The part of the sample in which we have not succeeded to address the new employment

Table 25 Procedure for obtaining salary (tax-rolls for post-bankruptcy salary)

Type of new employment	N	Methodology for estimating income at the new firm
CEO at new firm	281	Estimated compensation at the new firm is average CEO compensation for Norwegian companies in similar industry with sales of at least NOK five million
Independent/consultant	95	Estimated compensation at new firm is tax rolls plus the average difference between tax rolls and accounts for CEOs maintaining executive employment
Other (regular)	326	Estimated compensation at new firm is tax rolls plus the average difference between tax rolls and accounts for CEOs maintaining executive employment
Retired	62	Individuals that are over 65 years old are assumed to be retired, unless they maintain executive employment
Missing (regular)	682	The part of the sample in which we have not succeeded to address the new employment

Table 26 Procedure for obtaining salary (alternative methodology)

10.6.2 Supplementary illustration for CEOs' compensation changes

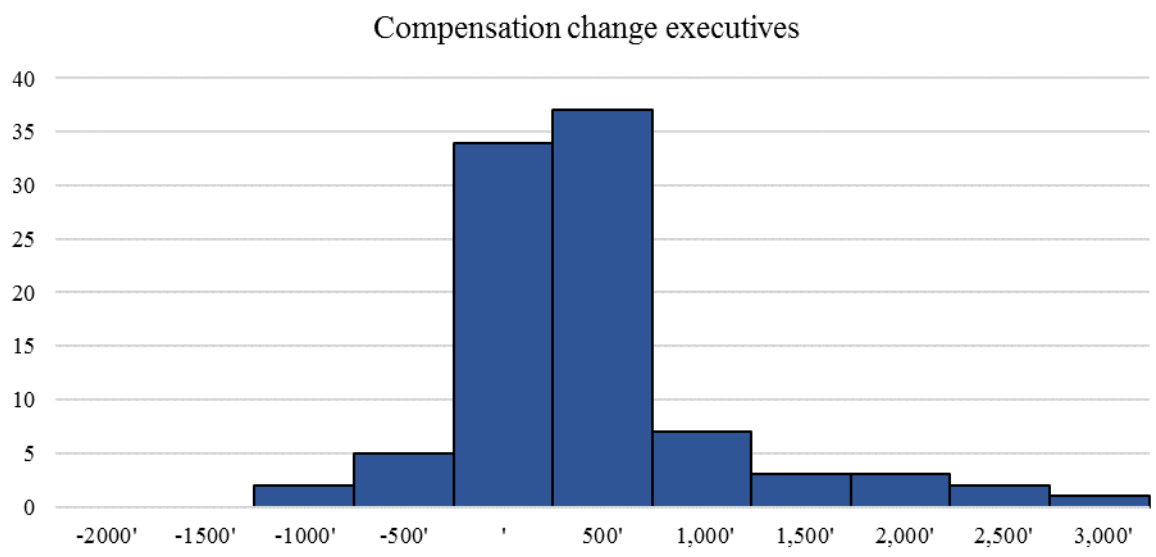

Figure 7 Frequencies of compensation changes for executives

Figure 7 displays the frequency distribution for different intervals of compensation loss for CEOs maintaining an executive position. In the illustration, negative figures indicate compensation loss and positive figures illustrates increased compensation in new employment. It is evident that a compensation change of zero to NOK 500 thousand has the highest frequency.

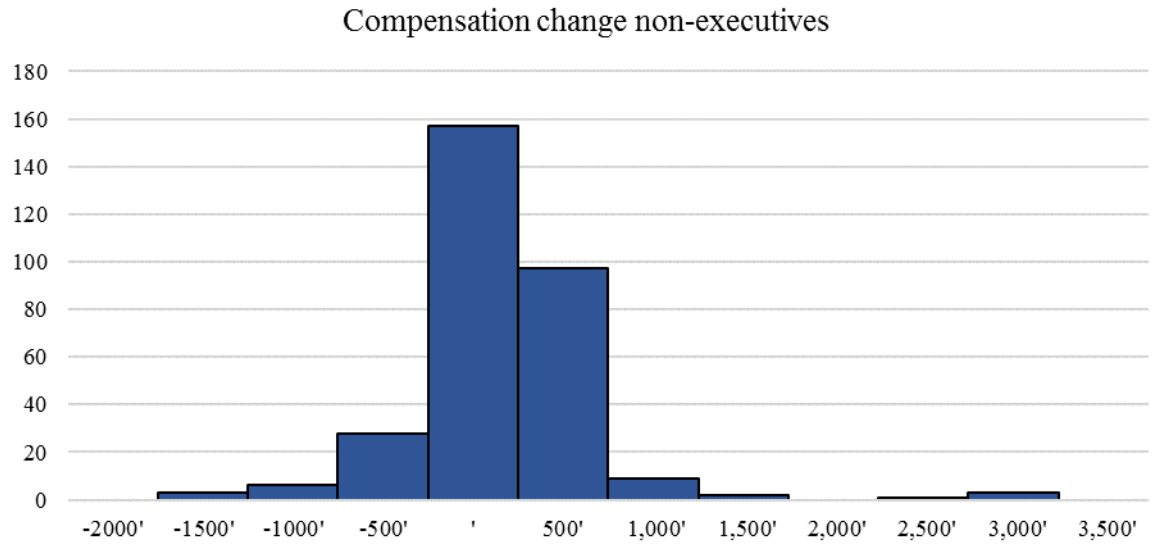

Figure 8 Frequencies of compensation changes for non-executives

Figure 8 illustrates the frequencies of compensation loss for CEOs leaving the executive labor market. From the figure, it is evident that the distribution is more left skewed than for

the executives. Further, the figure shows a compensation change between negative NOK 500 thousand and zero has the highest frequency.

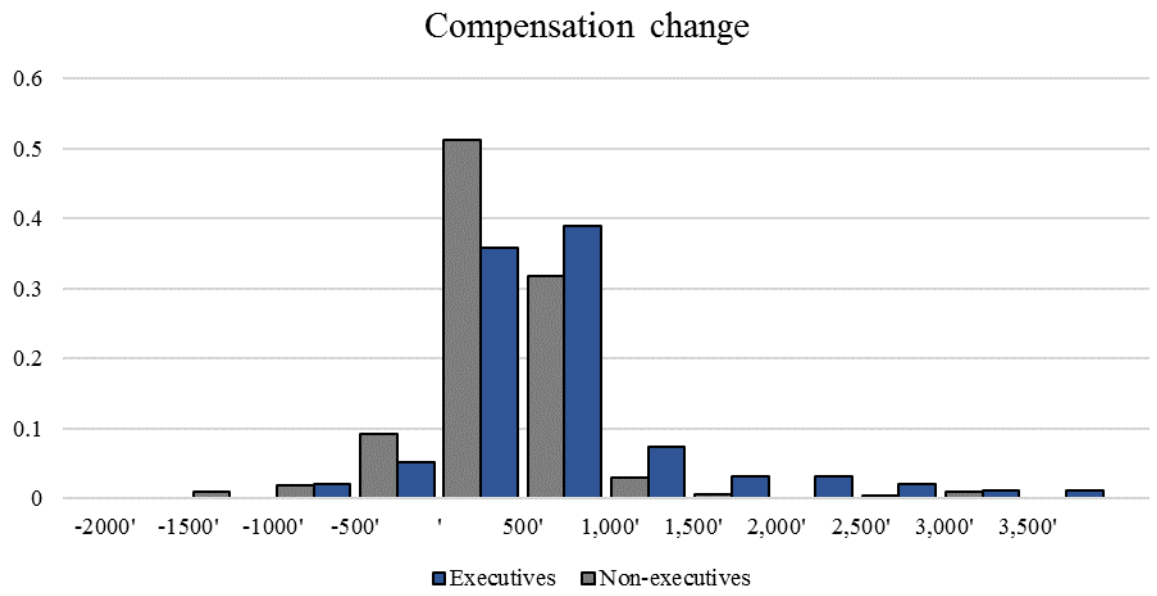

Figure 9 Relative frequencies for compensation changes for executives and non-executives

Figure 9 displays relative frequency of compensation change for both executives and non-executives. Similar to the figures above, it is evident that non-executives have a more left skewed distribution than the executives. Hence, the compensation loss is higher for non-executives.

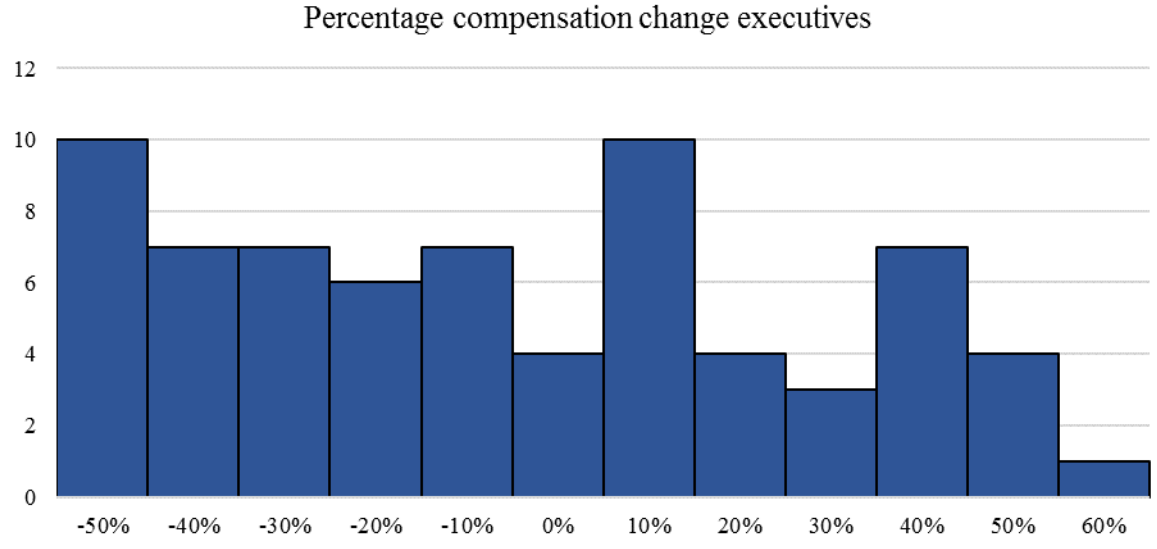

Figure 10 Frequencies of percentage compensation changes for executives

Figure 10 shows that the percentage compensation change for executives is slightly left skewed. Further, it is evident that -50% and 10% have the highest frequencies.

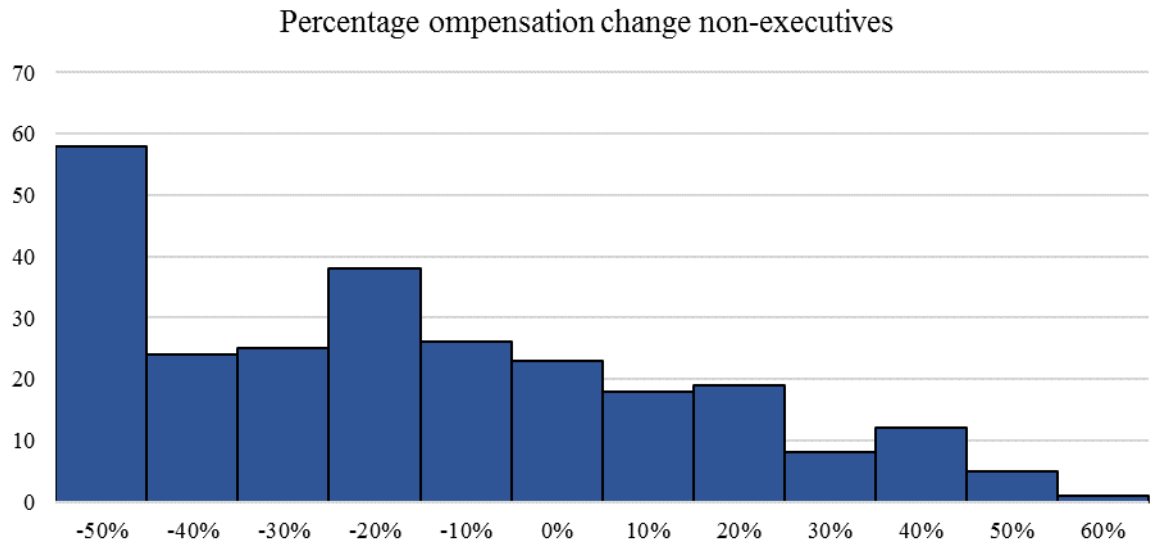

Figure 11 Frequencies of percentage compensation changes for non-executives

From Figure 11, it is evident that percentage compensation change is left skewed for non-executives. Moreover, -50% and less has the highest frequency amounting to 58 observations.

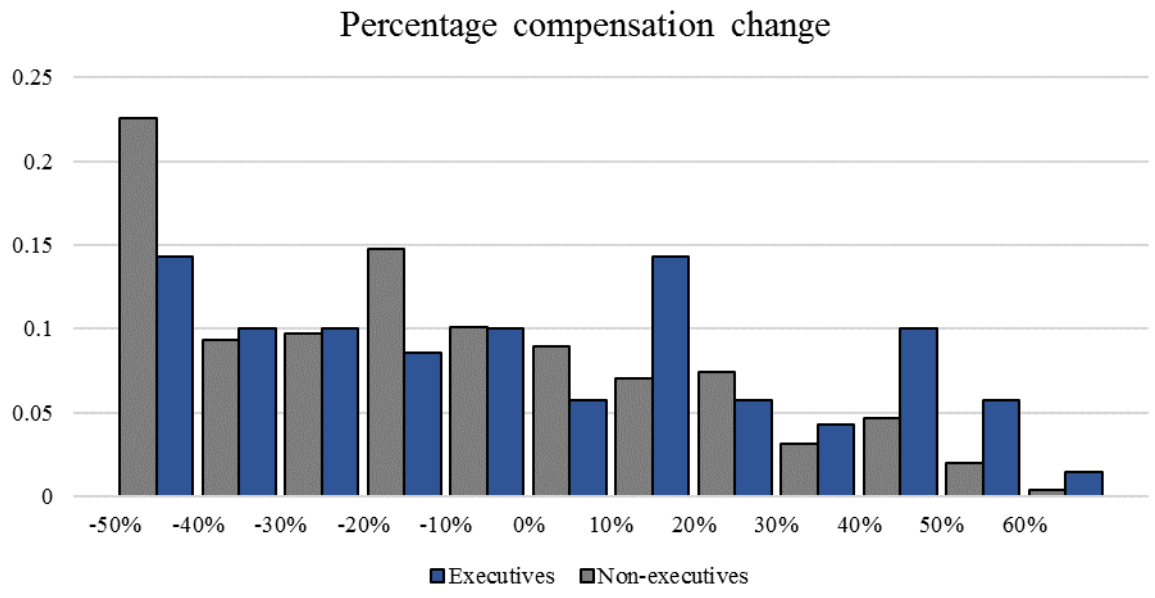

Figure 12 Relative frequencies for percentage compensation changes for executives and non-executives

Figure 12 shows the relative frequencies of percentage compensation change for both executives and non-executives. The distribution for non-executives appear more skewed to the left compared to the distribution for executives.