Shareholder proposals during times of Financial distress

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Master thesis

Abstract

The aim of this thesis is to research the association between shareholder proposals and firm's financial distress. By regressing the past annual changes in shareholder proposals, their effects on a firm's risk of distress has been measured by three different outcome variables: Altman's Z-score, Ohlson O-score and the distance to default (KMV model). It has been shown that not all proposals have a relation to a firm's likeliness of facing a distress. Namely, no association has been found for the overall proposal sample and for governance and performance proposals. More interestingly, a statistically significant association has been proven with proposals submitted by knowledgeable shareholders. Namely, a firm that experienced a significant volume change in proposal has a lower probability of distress.

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I. Introduction

In recent decades a rise in shareholder activism has been observed. Its goal is to actively pursue changes in management policies (Ersnt & Young, 2015). This is paralleled by a rise in the number of submitted shareholder proposals to be voted upon annual general meetings. A shareholder proposal is defined as a recommendation to the company's board of directors to follow a certain path of action and is a technique by which shareholders actively seek changes within companies(Legal Information Institute, 2016).

This thesis assesses the relation between the number of submitted shareholder proposals and its association with a firm's risk of financial distress. Regressing the variation of shareholder proposals will test the relation by applying a difference-in-difference method of analysis. To measure a firm's financial risk, three different outcome variables have been used: Altman's Z, Ohlson O, and the Distance-to-default.

A difference-in-difference method of analysis showed regression results that are statistically significant and have negative value for certain coefficients of interest entailing a negative correlation between shareholder proposals and firm's risk of financial distress. Namely, the interest variable is statistically significant and negative for proposals submitted by knowledgeable shareholders. Hence, a significant variation in shareholder proposals submitted by knowledgeable shareholders is associated with a lower propensity of a firm facing a financial distress. In other words, a firm that has a higher variation in the number of proposals submitted by knowledgeable shareholders has a lower probability of facing a financial distress.

Nevertheless, no significant link has been found between proposals relating to a firm's performance and governance policies and firm's financial distress. These relations are highly dependent on the type of submitted proposals and the proponents that submit them. Moreover, the magnitude of the yearly variation in the number of submitted proposals heavily impacts the relation between shareholder proposals and firms' financial distress.

Numerous academics discussed the benefits of shareholder proposals[1]. They believe that it is a mechanism to bridge the principal-agent problem. Moreover, it gives a chance to shareholders to voice their discontent and promote an alternative course of action to the one promulgated by the firms' management.

Nevertheless, little research has shown a link between shareholder proposals and the bettering of companies' performances. Moreover, certain authors [2] conclude that shareholder proposals are an expensive corporate governance tool; they argue that the cost of submitting a proposal outweighs its benefits.

Hence, there are arguments on both sides of the aisle regarding the usefulness of shareholder proposals. This research assesses the predictive power of shareholder proposals. Specifically, it investigates whether stockholder issue more proposals prior to the company's financial distress. If this conjecture is proven, it will provide significant evidence in favor of shareholder proposals. Thereby incentivizing policy makers to further democratize the legislation surrounding shareholder proposals.

This research is relevant as it raises debate surrounding policy changes regarding shareholder proposals. Moreover, it could affect the way investors opt for their investment decisions, as investors might take into account proposal submissions into their valuation function prior to making an investment decision.

Within the field of academia shareholder proposals are an unexplored topic. The research done until now has mainly focused on the link between shareholder proposals and the subsequent market reaction, the change in firm performance and subsequent changes in corporate governance. This research is the first to investigate the predictive capabilities of shareholder proposals.

The question that is assessed throughout this paper is the following:

Do shareholders predict the financial distress of their company's through the submission of shareholder proposals?

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[1] See Wahal (1996), English, Smythe and McNeil (2004), Barber (2006), Thomas
[2] See Wahal (1996), Karpoff, Malatesta and Walking (1996), Del Guercio and Hawkins (1999), Klein and Zur (2009), Prevost, Rao and Williams (2012)

Shareholder goal is to maximize their wealth by obtaining higher dividends or higher prices for their respective shares (Maboussin, 2011). Ball & Brown (1968) demonstrated that shareholders were able to anticipate up to a year in advance the earnings surprises of their stocks. Hence, shareholder have an ability to predict the future development of their stocks. This research will disentangle whether shareholder use proposals prior to the distress of their company's as a way to voice their concerns and to initiate changes that will better the company in the future.

This thesis is structured as follows: section II literature review, section III theoretical framework, section IV methodology and data, section V result, section VI conclusion, and section VII references and appendices.

II. Institutional background

a. History of Activism

Shareholder Activism has evolved through decades. One cannot consider it as a steady state that did not change form or purpose through time. In the section bellow the different periods of Shareholder Activism will be detailed and how they were manifested. Moreover, the different changes that affected the variation in shareholder activism and thus shareholder proposals will be explained.

1930s'

For American's, the 1930's are remembered for the crash of the financial system and the subsequent Great Depression that brought the US economy to its knees. Its consequences were numerous and tragic: millions of people were left jobless and numerous starved to death (Bernanke, 1983).

At the time the US legislators wanted to prevent anything similar from occurring ever again. They set up the Securities and Exchange Commission (hereafter SEC) to overview the financial markets. More importantly, the newly passed laws enabled the disaggregation of the ownership and control of firms

(Sarkar, 2016). As a consequence of these actions the agency problem was created; whereby firm owners (i.e. shareholders) had different objectives than controllers (i.e. managers) and the owners do not have clear insight in the actions of managers. The former main concern in maximizing firms value via higher payout, higher dividends and higher share prices. However, the latters main objective is to maximize its compensation package or to promote his private agenda (Frank, 2008).

This agency problem brought about the need for controlling and overseeing the actions of managers. The roots of Shareholder Activism can be found in the separation of ownership and control that was mandated by the SEC after the collapse of the US financial system in the 1930's.

Nevertheless, the way in which Shareholder raised their discontent at the time was essentially by 'walking the street'[3]. The lack of proper shareholder activism can be attributed to many factors. Firstly, the legislation in place at the time was unfavorable and didn't pave the way for activism. Secondly, many people at the time saw the market as irrational and a wild scheme. Hence, they saw little reason to indulge in expensive and costly maneuvers (Ball & Brown, 1968).

1970s'

Four decades later came the first recorded type of activists: Corporate raiders. These investors were notorious because they often acquired large stakes in underperforming companies and used their significant voting right in order to maximize their returns. The main similarity between all corporate raiders is that they would invest in companies that had undervalued assets. Furthermore, they used aggressive tactics in order to achieve their goals. Theses measure include replacing top executives, downsizing operations, or even liquidating the company (Eddey, 1991).

Their methods came under public scrutiny. They were negatively perceived due to their individualistic attitude and absolute disregard for the needs of others (Anders, 1992). A famous cinematographic example of a corporate raider is *Gordon Geko* in the movie series 'Wall street' (Douglas & Sheen, 1987). In the first cast,

[3] If a Shareholder were discontent with the actions of the management, he would simply sell his shares and not commit to any other action.

Geko purchases a troublesome airline firm for the unique purpose of selling the company's assets and making a profit. This reciprocated in the liquidation of the company and all employees were left jobless.

Nevertheless, economic theory and academic research provides justification for corporate raiders. If an investor has the means to liquidate a company and the liquidation value is higher than the going-concern value. One can justify the liquidation as a profit maximizing activity, which is viable under economic theory (Coffee, 1986). Moreover, Holderness and Sheehan (1985) evaluated the stock market effect of the acquisition of firms by major corporate raiders. They summoned that the initial purchase of a targeted firms stocks increased the wealth of the firms' shareholders. Hence, the market perceives the involvement of corporate raiders as a positive signal for the future bettering of a firm's performance.

However, employees and managers negatively perceive the actions of corporate raiders. This is principally due to their heightened risk of being fired or loosing their jobs due to the firm's liquidation. To counter the potential of raiders taking over firms, managers of publicly traded firms established a wide array of measures to halt their actions. Some of those measures will be cited hereafter (Willcox, 1988). Golden parachutes are a method of keeping the incumbent managers in place even after the corporate raiders acquired the firm. Due to the high premiums that managers are entitled to receive upon termination it is infeasible and costly to fire them immediately. The increasing leverage of a company's assets is yet another method employed. This disabled the raiders from acquiring a company by taking on debt, as acquiring a highly leveraged company and taking on additional debt is not profitable. The introduction of poison pills is another countermeasure often enacted by managers. It enables the incumbent shareholders the right to buy the shares of their company at a discount if a new stockholder purchased a substantial amount of the company's shares.

The corporate raiders can be seen as the first active investor that did not 'wall street walk' if they were displeased, they actively fostered changes from the inside. Namely, they took on aggressive tactics in a resolute manner to turn their investments into profitable activities. Nevertheless, their actions are not always seen as being morally correct.

1980s'-90s'

After the golden years for corporate raiders, their propensity started to decrease. Two factors are responsible for the reduction in corporate raids. Firstly, the large public uproar against them brought them a lot of negative attention and pressure. Secondly, the countermeasures enacted by company's managers proved efficient (Pound, 1992).

The 80's saw the rise of shareholder activism by institutional investors. These types of investors are generally pension or mutual funds. Institutional investors are an aggregation of a multitude of small investors that trust an organization with its investment (Gillan & Starks, Corporate governance proposals and shareholder activism: the role of institutional investors, 2000). Furthermore, these organizations are bound by leaner legislative rules. The growth of their activism is due to the growth in their equity shares within companies during that time period (Gompers & Metrick, 2001). In 1985, the council for institutional investors was founded, its objectives was to pool together institutional resources in order to achieve their common goals. Today the council is composed of more than 140 funds that are in control of more than $3 trillion in assets (CII, 2017).

The main goal of institutional investors is to: (1) repeal antitakeover amendments, (2) adopt cumulative voting, and (3) increasing the independence of the board of directors (CII, 2017).

The 90s' saw a decrease in the number of proposals submitted by funds as they started to preconize dialogue with managers and using the media to push forward their actions (Bla981).

The rise of institutional investor activism can be seen as another form of activism, as they have an active role in the decision making of companies. Moreover, their methodology is not as aggressive as corporate raiders. Their main goal is to strengthen then companies in order to give them the tools to achieve good and sustainable long-term results.

2000s'

After the large accounting scandal that occurred at the beginning of the millennium (i.e. WorldCom, Enron) many people were in favor of tighter controls and stricter governance policies (Agrwal & Sahiba, 2005). This helped smaller

shareholders to become more actively involved and initiate policy changes within firms. These shareholders rarely have more than 10% of the shares total.

Moreover, the increased presence of the media further allowed smaller shareholder to promote their ideas (Gillan & Starks, 2000). The early part of the century saw a tremendous rise in the number of Hedge funds and Hedge fund activism.

Furthermore, a rise has been observed in socially responsible proposals. Hence, socially active groups became active shareholders to foster their personal agendas and promote their personal goals (O´Rourke, 2003).

b. Legislation surrounding Shareholder Proposals

In this section the details of the legislation regarding shareholder proposals will be detailed. This section will mainly describe the rule 14a-8. Moreover, the implication of the Dodd Frank Act for shareholder proposals will be explained. Lastly, the SECs' guidelines for future improvements in shareholder proposals will be discussed.

Legally defined a shareholder proposal is a *recommendation or requirement that the company and its board take action, which is to be presented at the meeting of the company's shareholders* (Legal Information Institute, 2016).

Rule 14a-8

The Securities and Exchange Commission rule 14a-8 governs the rules surrounding shareholder proposals. Although, this rule has been changed and amended many times, the current rule requires two main criteria's to be fulfilled in order for a proposal to be voted upon on general meetings. The first criterion to be fulfilled is the *eligibility criterion.* In other words, not everyone is able to submit a proposal.

In order to be eligible to submit a proposal one has to have held at least $2000 worth of company's market value or 1% of the company securities. Moreover, the proposer has to have held those securities for a period of at least a year at the date of proposal submission. Furthermore, he needs to abide to hold the shares until the meeting date; this is verified via a written statement that stipulates

ones good faith in retaining the shares until the annual meeting. The proposer needs to provide a written statement from his record holder (i.e. Broker or Bank) or from the company's personal record that he has been holding the designate amount of shares and that he has been holding them for more than a year. Moreover, one needs to be represented at the shareholder meeting in order to have his proposal voted upon.

A certain procedure needs to be followed in order to have a proposal being voted on a shareholder meeting. Namely, a proposer can submit at most one proposal per meeting. Moreover, the proposal description can have a maximum length of 500 words. More importantly the deadline submission dates need to be respected. If the date of the annual meeting has not changed compared to the previous year, the proposal needs to be sent to the company no later than 120 days before the annual meeting. If the date of the meeting has been moved, the deadline for submitting proposals is generally stated in the company's quarterly reports (10-Q reports). In the case of an exceptional meeting or that no date is stipulated in the 10-Q reports, the proposal needs to be submitted within a 'reasonable time' in order for the company to be able to print and send proxy material.

In the case that a proposal does not meet all the above-mentioned criteria the company's management has the ability (not the obligation) to exclude the proposal from the proxy statement. Nevertheless, the management needs to inform the proposer of the shortcoming of the proposal and give him an additional 14 days to better the proposal. Moreover, the firm's management has the burden to demonstrate that a proposal does not fit all of the above-mentioned criteria, if it succeeds it has the right to omit it from the proxy statement.

It is necessary to mention that shareholder proposals are non-binding. Even if a proposal submitted by a stockholder has received majority backing, the board has the capability not to adopt a resolution and it does not have to provide any justification for ignoring a majority-backed proposal.

Dodd Frank Act

In the aftermath of the 2008 financial crisis, something needed to be done in order to prevent a similar catastrophe from occurring in the future. In 2011, the

Obama administration passed the Dodd Frank Act, which was the biggest regulatory change to the financial market since the Great Depression.
The Dodd Frank act brought two main additions to the current rules regarding shareholder proposals. Firstly, it obliges a company to have regular non-biding voting regarding the compensation of the company's executives. The frequency of the voting is at the discretion of the shareholder that can choose to vote on an annual basis, or every two or three years. This new regulations is known as '*Say-on-Pay'* and it's goal is to increase the transparency of executive compensation, as the directors compensation packages are now public information.

A second important amendment is Section 971, or rule 14a-11. More commonly known as '*Proxy Access'*. This rule allows an investor that has more than 3% of a company's holdings, and has been holding such a position for more than 3 years and is not seeking firm control to propose the nomination of up to a quarter of a company's board of directors via the use of a proxy statement. Section 971 significantly reduces transaction costs as shareholders can propose up to 25% of a board's composition with a single proposal, which significantly reduces the filling costs and the time spent filling the numerous proposals. The goal of the legislators was to allow institutional investors to file more quickly as they typically hold more than 3% of the shares. Moreover, this rule excludes Hedge funds, which do not typically hold a share for more than three years.

When the proposals are gathered and agreed on, the management will send out via mail or electronic mail a proxy statement. This statement contains the proposals that will be voted upon on shareholder meetings. The proxy statements contain two sources of issuers. Company's management asks to vote on the appointment of new board members as well as their executive compensations. It also contains shareholder proposals that often focus on corporate governance issues as well as social and environmental concerns. The proxy statement gives management guidance on how to vote regarding different proposals.

Current developments

The US legislation does not permit binding shareholder proposals under rule 14a-8. It argues that binding proposals would strip down the managerial

power and diminish their abilities to properly govern. Nevertheless, activist investors are pushing for binding proposals via amendments within companies' by-laws[4]. By amending the by-laws, managers are unable to ignore a shareholder proposal that has gained majority-voting support and are forced to implement it. Moreover, the SEC is indirectly leaning in favor of activists, as it often takes no action position on shareholder proposed by laws. In other words, the SEC is ignoring the managers that are aiming to omit proposals, thereby fostering shareholder's initiatives (Wood, Reyes, & Bernstein, 2016).

This is comparable to European countries were most shareholder proposals are of a binding nature.

c. Differences in Shareholder proposals by country

Buchanan et al. (2012) compared the legislative rules and outcomes in the US and the UK. A shareholder in the UK is more empowered compared to his US counterpart. The former ones proposals have a binding statute while the latter do not. Furthermore, he has the power to call special meetings and elect directors. From a legal perspective, the UK shareholder proposals are a powerful device to discipline managers as compared to US shareholder proposals. Nevertheless when comparing firm performance associated with proposals, one argues that the long-term performance in the US betters the one in the UK. Moreover the proposer and the proposals vary. In the US the main proposers are small shareholders while institutional investors are the predominant submitters of proposals in the UK. The easiness of submitting proposals allows smaller shareholder to be active in the US. While a significant number of social issues are submitted in the US, it is not the case in the UK, where shareholders do not focus their attention toward social and environmental proposals.

It is important to note that there are differences in countries when it comes to shareholder proposals, therefore ones country results and implications need to be properly evaluated and assessed before attempting to extrapolate one country's evidence to others.

[4] Firm specific legislation that owners and managers have to abide to. The by-laws also predict sanction if they are not respected and are enforced by a higher-authority.

III. Literature review

a. Pension and labor funds

This section will discuss the effects of activist campaigns by pension and labor funds. It will detail the (i) motivations and objectives; (ii) the targeted firm type; (iii) the value outcome; (iv) the performance effects and (v) consequences for corporate governance. It is important to note that the methodology used to assess the effect of activism is research specific. Namely, the researches use different method to operationalize shareholder activism. The most common methodology used is to investigate the effect of shareholder proposals via the rule 14a-8. Moreover, the records and methods of the Californian Public Employees retirement system (CALPERS) are often assessed by researches as these funds offer a large amount of information publicly (Smith, 1996).

Norli, Ostergaard, and Schindele argue that a firm's stock price is a quintessential reason for shareholders engaging an activist campaign (2015). They argue that if an investor believes that his activist campaign will lead to improved firm performance it will reciprocate into an increase in firm value. Hence, investors will quickly be able to rip-off the benefits of their activist campaign as the stocks are liquid. On the contrary, if a stock is overvalued, the activist investor will not have an incentive to actively engage, as he will not be able to rip-off the benefits.

The target of activism of pension/labor funds is mainly focused towards firms that have poor performance metrics. Whether a fund will target a firm will mainly be based on a firms' performance assessment (Renneboog & Szilagyi, 2011). All authors make this ascertainment. Karpoff, Malatesta and Walking determined that the three ratios that were mostly looked at by funds before engaging an activist campaign were: market-to-book ratio, operating returns and sales growth (1996). In other words there is a negative relation between the probability of firm being targeted by an activist campaign and the firms performance metrics.

An interesting notion that needs to be pointed out is that firms are also being targeted due to their bad corporate governance policies. Evidence shows that well-performing firms that have a bad governance structure have a higher probability of being under the scrutiny of fund activism. This is due to the

assumption that bad governance will eventually lead to a decline in firm performance. Thus, activist will try to remediate to it (Karpoff, Malatesta, & Walking, 1996).

By analyzing CALPERS activist campaigns, Smith found further characteristics that lead a fund to engage an activist campaign (1996). He stipulates that firm size and the level of institutional holdings are important factors in determining whether funds will actively get involved. The former is important as larger firms enable activists to gain benefits from activist campaigns quicker, as a smaller performance increase in a large company will aggregately lead to a larger absolute gain. The latter is an important determinant, as a higher level of holdings will also lead to higher gains from a campaign as it simplifies the process of gathering and creating a consensus between shareholders.

Nevertheless, Pension and labor funds do not all have the same objectives or strategies to attain their goal. Therefore, ones objectives will be the primary determinants on whether a fund will engage into an activist campaign. Furthermore, it will also determine the method by which a fund will pursue its campaign (Del Guercio & Hawkins, 1999).

Pension/labor funds are not univocal in their objectives or motivations as Hedge funds are about maximizing their wealth. As stated by Barber, institutional activists can follow two different paths: shareholder activism or social activism (2006). Both arise from the principal-agent problem; the former is due to the conflict between firms' management and shareholders while the latter is a conflict between portfolio managers and shareholders. Barber believes that shareholder activism is a useful monitoring and governance tool and is a value added activity. While social activism are promoting portfolio managers private agenda at the detriment of shareholders wealth. Therefore, one must foster shareholder activism and limit the possibilities of portfolio managers engaging in social activism as shareholder only gain benefits from shareholder activism.

Del Guercio and Hawkins discuss the heterogeneity in activist objectives (1999). A funds' indexation strategy [5] is a primary reason for it to engage in activism. If a fund is heavily indexed it is unable to simply sell its shares if it is miss-

[5] An indexation strategy is an investment method that attempts to mimic the returns of a market index.

pleased with a firms stock price developments. Thus, in order to counteract a falling share price, funds would be keen on engaging in activist campaigns to initiate changes as they are constrained from selling it. Another important motivation for a fund to engage an active campaign is the level of publicity it wants to attract. Due to the importance of today's media, a fund would be keen to initiate a public campaign in order to signal itself and leverage firms into applying their recommendations.

Prevost, Rao and Williams investigated the impact of labor union activism and their motivations for activism (2012). They conjectured that labor unions have an information advantage over other shareholders as they have internal access to information. Moreover, the authors analyzed whether labor unions used that advantaged to their own benefits by increasing their compensation packages or whether unions are keen on initiating necessary governance changes. They found that the latter holds, as it is believed that unions hold dear the survival of their firm.

One essential question is whether the activism of shareholder creates a positive wealth effect via a positive market reaction. The research made on pension/labor funds mainly provides insignificant and contradicting results. Thomas and Cotter analyzed a three day window surrounding the mailing of a shareholder proposal under rule 14a-8, their results are insignificant as they believe that proposals do contribute to firm value but they acknowledge that the wealth effect is hard to distinguish and operationalize (2007). On the other hand, firms that lack governance mechanisms and are targeted for the first time by an activist funds do experience a positive wealth effect that is characterized by abnormal stock price increase around the time of the proposal announcement (Renneboog & Szilagyi, 2011). This goes to show that the market views proposals as a beneficial control tool for shareholders. Cunat, Gine and Guadalupe went even further examining the market reaction toward proposals that gained majority support and the content of those proposals (2012). Their results show an average positive abnormal stock return of 1.3% at the voting date. Furthermore, they conjecture that the implementation of a proposal that gained a majority of votes will lead to a 2.8% increase in market value. The market reaction towards

proposals is even more significant when a proposal is centered on the repeal of antitakeover provisions, the diminishing of R&D expenditures and when the proposer is an institution. On the other hand, Prevost and Rao find opposing results. Namely, they found a significant negative effect market reaction around the mailing date of shareholder proposals (2000). In their minds, the submission of a proposition only occurs once the negotiation between management and funds fail. Hence, it is a signal of management's ill faith.

Moreover, it should be noted that no research showed a long-term value effects of shareholder proposals.

Little significant results were obtained when assessing the performance effects of fund activism regarding the improvement of operating results. The majority of research investigated whether certain ratio bettered after the submission of certain shareholder proposals.

Nevertheless, one study is worth mentioning. It researched "say-no-campaigns" and their effect on the targeted firms (Del Guercio, Seery, & Woidtke, 2008). "Say-no-campaigns" are quite specific. Firstly, they require little monetary effort to start. Secondly, it allows the direct targeting of certain individuals within the firm. These campaigns can be used to express ones dissatisfaction with the current state of affairs. Their research results yield positive operating improvements of a "say-no-campaign", as it is an effective way to align the managers with the necessities of shareholders.

Compared to earnings and performance figures were little or no positive effects of shareholder activism can be found, activism centered on bettering a company's corporate governance does conjecture notable results. The success of shareholder activism centered on corporate governance issues is due to the successful implementation of the latter. Smith provides the most clear-cut evidence, 72% of CALPERS propositions relating to corporate governance are being implemented (1996).

In sum one can doubt the usefulness of shareholder activism when investigating its wealth and performance effects. Nevertheless, one cannot doubt the theoretical benefits and arguments made by numerous authors that shareholder activism (shareholder proposals, direct negotiations, say-no-

campaigns…) provide a useful mechanism to counteract the problems that arise due to agency concerns.

b. Hedge funds

In this section, academic papers that assessed the utility of Hedge fund activism will be discussed. A common feature of all the research done on Hedge fund activism is the method by which they are operationalized. Namely, the 13D schedule is most valuable tool in depicting Hedge fund activism. It is a public document that a shareholder needs to file ten days, at latest, after having acquired more than 5% of a company's stocks. Moreover, the acquirer needs to state it's intent on how to use his newly acquired stock. Once a Hedge fund files the 13D schedule and states its' intent to be proactive, one can view the above-mentioned Hedge fund as an activist shareholder. Venkiteshwaran, Iyer and Rao managed to depict nine differentiable intents of Carl Icahn, the head of a very large Hedge fund and famous activist shareholder (2010). They depicted nine different categories: *Engage management, capital structure, corporate governance, business strategy, asset sale, blocking mergers, offering financing support in troublesome times, strategic alternatives, proxy fights, passive investment, to become active, offer to acquire a firm.* Being able to properly categorize hedge funds intents is crucial to properly conduct a research. The research conducted on the consequences of hedge fund activism used similar categorization methods to the one mentioned above to assess the effect of hedge fund activism on earnings, performance, and corporate governance.

Scholars focused their attention on trying to depict the types of firms that hedge funds were target. A common characteristic of targeted firms is that they have large stocks of cash on hand and a low dividend payout ratio. As first stipulated by Jensen, this is a free cash flow concern (1986). In essence it means that firms are not optimizing their performance thereby hindering shareholder value as they could use the excess cash to maximize shareholder wealth. Brav, Jiang, Partnoy and Thomas confirmed this assumption; they found that hedge funds target companies with low dividend payout ratios [6] (2008). The same

[6] Dividend payout ratio = dividends/ net income

ascertainment was made by Venkiteshwaran et al (2010).

Klein and Zur investigated the similarities and differences between entrepreneurial activists [7] (2009). These activists have to file a 13D schedule and stipulate their proactive intent. They separated the entrepreneurial activists in two categories: hedge funds and others (i.e. private equity funds, venture capital firms, asset management funds…). The authors concluded that Hedge funds target more profitable and healthier firms compared to other entrepreneurial activists.

In sum one can say that activist Hedge funds mainly target firms that have a free cash flow problem, which is characterized by an excessive stock of cash and a low dividend payout. Moreover, they generally target healthier and smaller firms.

One can definitely question the motivations of Hedge funds to become active. Boyson and Morradian provide a detailed explanation of Hedge fund incentives (2011). They conjecture that hedge funds have less regulative pressures and more monetary incentives to foster an activist agenda. Compared to pension or mutual funds, hedge funds are not obliged to cap their holdings. Furthermore they are not legally obliged to diversify their portfolios. Hence, a hedge fund can be heavily invested in a firm and thereby have strong incentives on being active. Furthermore, their compensation scheme is heavily tied to the performance of their fund; this increases the intrinsic motivation of Hedge fund managers to better the performance of their underlying portfolio. If a manager believes that by taking an active stance within a firm he will increase shareholder value, he has a large monetary incentive to do so. Brav et al. further compliment the above-mentioned motivations by analyzing the structure of Hedge funds (2008). Hedge funds are pooled sums of private investments that are not broadly available to the general public. This infers that investors are aware of the higher investment risks. Hence, these funds face fewer restrictions and are more risk prone.

In order to analyze the earning and market reaction of Hedge fund activism, academics rely on the cumulative abnormal return of a stock around the event date, which is the filling date of the 13D schedule. The event window used in the

[7] It's an investor that acquires a significant stake in a public firm with the intention to better of bettering the company and realize a positive return on his investment.

research varied from a two days period up to a 30 days period. All of the research mentioned bellow found a positive stock price reaction to the filling of the 13D schedule (i.e. a Hedge fund becoming active). Nevertheless, the authors did not agree on the reasons for such a reaction. Venkiteshwaran, Iyer and Rao believe that the positive stock price reaction is due to the future expected gain from the eventual takeover of the firm due to the involvement of Hedge funds (2010). Greenwood and Schoor also promote this theory. They discovered that the positive short run abnormal returns are due to the likeliness of a firm being acquired ex-post the filling date. On the contrary, firms that remain independent 18 months after the filling experience a negative abnormal stock return (2009). On the other hand, Brav et al. synthesize that the abnormal stock reaction is due to the belief that Hedge funds activism will lead to a positive changes within firms that will better the firms' performance (2008).

Klein and Zur depicted the same positive market reaction for 13D fillings (2009). They nevertheless took the research a step further to research whether the involvement of a Hedge fund affects the returns of bondholder (Klein & Zur, 2011). They found an excess bond return of -3.9% around the filling date and -4,5% a year after the filling. The authors concluded that the reasons for such a significant decrease in bondholders' wealth is due the influence of active hedge fund managers. The latter promote financial and accounting changes at the detriment of bondholder. These changes involve decreasing firm's cash on hand as well as increasing firm's debt level. The push towards these changes is primarily due to the will of solving the free cash flow problem.

Notable authors also focused on earnings and performance metrics changes after Hedge funds became active. The metric that was most utilized was the return on assets [8], it measures the operational performance of a firm by dividing the amount of profit realized by the amount of assets utilized. Academics mostly agree on the positive effect that hedge funds activism has on firms returns on assets. An increase of 6% in the returns on assets is found for firms that have an active hedge fund involvement compared to matching industry peers. Moreover, these firms

[8] ROA= net income/ total assets

experience a cash flow increase of 8,4% compared to overall asset changes (Boyson & Mooradian, 2011). Brav, Jiang and Kim found that firms, in which a hedge fund is actively involved, have higher operating profitability. Furthermore, they controlled for industry, year, and firm size in order to provide relevancy and thoroughness to their results (2009).

Nevertheless, many question what are the reasons for such an increase in operational metrics. Clifford synthesized that the improved operating performance is principally due to the disinvestment of assets. In other words, companies that have an active hedge fund involvement are more likely to drop or sell underperforming assets (2008). Similar conclusion were made by Zhu who stipulates that the mere increase in the likelihood on hedge fund activism will reciprocate in decrease in CEO salary and a decrease in research and development (R&D) expenses (2013).

It is generally assumed that the reduction in R&D expenses will improve short-term performance due to a decrease in expense, which will be detrimental for long-term value creation. Hence, many stipulate that activist hedge funds will deteriorate long-term performance and thereby limiting long-term firm development. Surprisingly, Brav et al. found that the opposite holds. They investigated within a five-year time period whether the decrease in R&D spending led to a decrease in innovative capabilities. They found that the decrease in R&D spending after the involvement of activist Hedge funds was associated with an increase in the number of patents and citations. In other words a decrease in R&D spending led to an increase in innovativeness. Although, this sounds counter-intuitive, the authors stipulate two logical reasons for such an effect. Firstly, the involvement of Hedge funds leads to a better internal reallocation of resources. Moreover, it fosters a more efficient deployment of human resources. In essence, the decrease in R&D spending is overcompensated by the efficiency gains due to hedge fund activism (2016).

Scholars also investigated the effect of Hedge fund activism on firm's corporate governance. An active hedge fund involvement leads to higher than average CEO turnover (Brav, Jiang, & Kim, 2011). Moreover, Hedge funds push for a

larger board composition in order to position one of their members' in the board (Boyson & Mooradian, 2011). Lastly, Hedge fund campaigns and proposals are the most successful compared to other proposers (Bratton, 2010).

In essence one can say that active hedge funds mainly target smaller firms that have large cash reserves and low dividend payout. There is a positive market reaction to the announcement of an activist campaign of Hedge funds. This reaction could be triggered due to the future increase in ROA and performance metrics but also the higher likelihood of the firm being bought up. Hedge fund managers are incentivized to lead an activist campaign due to their compensation packages and minimal regulatory barriers that they face.

IV. Theoretical framework:

This section will discuss the theoretical approach of this thesis discussing the agency theory. Moreover, the reasoning behind the potential predictive capabilities of shareholder proposals will be provided. Lastly, the hypotheses of this paper will be stated and explained.

Agency theory, also referred to as the principal-agent problem, is a very common subject that arises within accounting and economic research. It occurs due to two reasons: (1) the goals of the principal and the agent are not aligned and (2) the actions of the agent are not observable or are costly to monitor (Frank, 2008). Within a corporation, the agents are the company's managers and the principals are the shareholders. The problem occurs once managers are more interested in maximizing their own wealth rather than focusing on maximizing the wealth of shareholders. Moreover, shareholders cannot directly observe the actions taken by a company's board of directors.

Fama and Jensen were the first to discuss the problems of separating the ownership and control of a company. They conjecture that this separation is beneficial as it opens room for specialized managers and expertise. Nevertheless, the benefits outweigh the cost of separation only if the agency problems can be

mitigated (1983). In other words, managers' goals need to be aligned with those of shareholders in order to gain a benefit from separating the ownership and control of firm's.

Policy makers and academics have developed numerous rules, policies and legislations to alleviate the agency problems within firms. Granting managers share-options is a way to align managers' goals to those of shareholders (Paul, 1992). Increasing the criminal and civil liabilities of managers that do not adhere to maximizing shareholder wealth is another way to partly mitigate the principal-agent problem (Stroh, Brett, Baumann, & Reilly, 1996). The corporate governance literature discusses and provides normative prerogative on ways to alleviate the agency problem. This thesis compliments the on-going debate by promoting shareholder proposals as a valuable corporate governance tool to offset agency problems.

Previous academic research showed the link between shareholder activism and the subsequent bettering of firm's results. By analyzing different activism activities such as proxy fights, shareholder-board discussion, 13D fillings and shareholder proposals, academics were able to conclude that a positive link exists between shareholder activism and positive market reactions [9], increased performance metrics [10]and firm's corporate governance[11].

Shareholders have numerous tools to raise their dissatisfaction about the on-going matters within their firm. Within that pamphlet, shareholder proposals can be seen as a last resort device. Namely, due to it's monetary and timely cost shareholders are often reticent to submit proposals. Moreover, the public nature of a proposal entails that its submission can have market wide repercussions, which want to be avoided by the shareholders due to the negative press surrounding their firm (Becht, Bolton, & Roell, 2005). Therefore, shareholders resort to the

[9] The following authors document a positive stock price reaction: Thomas and Cotter (2007), Brav et al (2008), Klein and Zur (2009), Greenwood and Schoor (2009), Venkiteshwaran, Iyer and Rao (2010), Cunat, Mireia and Guadalupe (2012).
[10] The following authors document an increase in performance metrics: Del Guercio, Seery and Woidtke (2008), Brav, Jiang and Kim (2011), Boyson and Mooradian (2011), Brav, Jiang, Ma and Tian (2016).
[11] The following authors document a bettering of firm's corporate governance: Smith (1996), Bratton (2010).

submission of proposals as a last resort to voice their concerns about a particular topic.

Due to the above-mentioned, it is theorized that shareholder resort to proposals when a firm's situation is critical. Such a situation arises when the firm is in a financial distress and the going-concern assumption is under threat.

Furthermore, shareholders main goal is to maximize their value and obtain the highest possible payout (Mauboussin & Rappaport, 2016). They want to avoid their firm's potential downfall, as it would harm their maximizing process. By submitting proposals, shareholder could push for a final attempt to change the direction their firm is taking.

It is here assumed that no meaningful changes could be done in the short term to avoid the ever approaching peril that shareholder could have potentially predicted. The submission of such proposals is not about influencing company changes as such a process would have been tried by other types of actions[12] but rather to publicly stipulate shareholders discontent with the action of management and the latters inability to counter to the looming dangers.

Shareholders are able to correctly anticipate, sometimes up to a year in advance, the abnormal earnings surprise of their stocks (Ball & Brown, 1968). This entails that shareholder do take accounting numbers into account when making an investment decisions. Moreover, shareholders are able to predict earnings surprises. Hence, it is necessary to investigate whether shareholder proposals can be used as a proxy to predict the future financial distress of firms.

This would provide compelling arguments regarding the predictive capabilities of shareholders. Moreover, it would show that proposals are a method employed by shareholder to voice their discontent. Lastly, it would give evidence in favor of shareholder activism as a valuable governance tool.

Hereby the four hypotheses that will be assessed within this research are enounced and explained.

[12] Such actions include direct negotiations or by forcing the appointment of one of their members in the boards management.

The first step is to investigate the overall effect of all submitted proposals. This entails, that all extracted proposals will be aggregately assessed. It is believed that there will not be any significant results for this hypothesis, as many of the submitted proposals within the analyzed sample do not relate to governance and performance proposals. Moreover, a company's management submits a noticeable amount of proposals, which are by definition not company's shareholders. Lastly, proposals relating to "say-on-pay" legislation will not be omitted. Hence, proposals relating to legislative obligations will be present.
For the reasons mentioned above, it is believed that no significant association will be found. Hence, the first hypothesis is enounced in the null form:

H_{1o}: There is not significant difference in the number of submitted proposals prior to a firm's distress.

During annual general meetings, shareholders have the ability to vote on numerous proposals. The proposals can be issued on almost any issue relevant to the company. In the past few years, social and environmental proposals increased in popularity. Moreover, the Dodd Frank act requires shareholder to vote on managers' compensation at least every three years (Thomas, Palmiter, & Cotter, 2011). Stockholder can also submit proposals that will have an impact on the governance and performance of their firm. Such proposals can consist of the elimination of staggered boards, demanding the resignation of a member of the board of directors and others similar proposals. It is believed that prior to a company's distress, shareholder will demand significant changes within the company.

Hence, they would increase the number of submitted proposals before the announcement of the distress. Thereby the second hypothesis arises (in alternative form):

H_{2a}: There is a significant difference in the number of submitted proposals relating to governance and performance issues prior to a firm's distress.

It is important to research whether the proposals submitter category is related to the probability of a firm being in a financial distress. It is believed that knowledgeable investors submit more proposals prior to a firm's distress. These are the investors that have a superior knowledge and have a higher percentage of an entity ownership. A superior knowledge and more experience allows investors to better interpret newly received information that in turn allows them to better assess the future development of their stocks. Knowledgeable investors have more to gain from an activist campaign, as they own a higher amount of stocks by which they can dilute the campaign costs and rip off the benefits from a positive stock price reaction. Due to these reasons it is believed that knowledgeable investors are better equipped and more incentivized to lead an activist campaign when they perceived that a firm's is not taking the right directions.
Hereby the third hypothesis arises (in alternative form):

H_{3a}: Knowledgeable shareholders submit more proposals prior to a firm's distress.

The last investigated hypothesis in the scope of this research is a mix of the second and third hypothesis. It will be the most restrictive hypothesis, and encompasses governance and performance proposals submitted by knowledgeable investors. Hence it is believed that this fourth hypothesis will yield the most significant results. From a theoretical standpoint, proposals submitted by experienced shareholders that relate to firms governance and performance measure will be the strongest signal of an investor's discontent and the need for changes within firms.
Hence, the fourth hypothesis arises (in alternative form):

H_{4a}: Knowledgeable investors will submit more proposals relating to governance and performance prior to a firm's distress.

V. Methodology

In this section the econometrical procedures used to conduct the research are detailed. It is important to understand the methodology in order to gain a critical understanding of the thesis. A thorough explanation of the variables will be provided as well as the regression equation. Moreover, the operationalization of concepts will be asserted.

The first step is to extract shareholder proposals. In order to gather data relating to shareholder proposals the database of the Manhattan Institute will be used. This database contains all proposals relating to the 250 largest US firms, ranked by the fortune magazine. Opting for this database is primarily due to its informational content and public availability. Namely, it provides all the necessary information relating to the proponent and proposal type needed to properly assert the hypotheses. The sample period is from 2006 till 2016, and offers 5589 different proposals. Once the data is extracted into an excel sheet format, additional manipulation were made.

Firstly, the downloaded proposals did not have any type of identifiers. Hence, the global company key identifiers were manually assimilated to each firm. This manipulation is quintessential as it allows the merging of different sets of data into a single set without which any further analysis would not be possible.

Secondly, the proxy monitor database does not differentiate between individual investors and gadfly investors. The two should be separated in order to better conduct the research. This assumption is fuelled by many factors. Gadfly investors submit a large number of proposals each year. From a rational perspective, one would not incur the submission costs if it does not believe that it will pay off in the future. Moreover, gadfly investors are similar to institutional investors and follow the same trends, which is not the case of individual investors (Gillan & Starks, A Survey of Shareholder Activism: Motivation and Empirical Evidence, 1998). Thus gadfly investors should be segregated from individual proponents. In order to accomplish this separation an online research about the names of each individual proponent was made. This research allowed identifying

the most notable gadfly investors and grouping them into a new proponent category.

The Manhattan Institute database shows a peak in submitted proposals in 2011, more interestingly is that after 2011 (i.e. the adoption of the Dodd Frank act). Nevertheless, the post increase in proposals is principally due to the Dodd Franck act, the second graph is a witness to this. Although, there is still a peak in 2011, the number of proposals remains constant before and after that period. Moreover, most proposals relate to executive compensation. Nevertheless, there are many other proposals relating to different matters of entities that are also comprised within the submitted proposals type. The proponent type that submitted the most proposals were company's managers. Nevertheless, almost the totally of their proposals relate to say on pay. Moreover, the differentiation of gadfly investors from individual investors is useful as gadlfy investor submit the most proposals after management.

Once the proposals are extracted and formatted there is the need to properly categorize them. The data obtained has four different categories of proposal type: *corporate governance, executive compensation, voting rules and social policy.*

As did Black (1998), these proposals will be subdivided into two groups in order to conduct the research. The first group is '*governance & performance'* that contains the three first type of proposals listed above. The second group will be comprised of social policy proposals. This is critical in order to distinguish those proposals that could have a material impact on the performance of the firms and those that do not.

It is important to mention that the sampling period of this research saw important changes in the US legislation regarding shareholder proposals. The new legislation mandates firms to have a regular vote regarding company's top-executive compensation plans. This is commonly known as the "say-on-pay" rule, mandated by the Dodd Frank act. It is essential to control for these types of proposals as they are not at the discretion of investors but are mandated by legislation. In order to alleviate the effect of the Dodd Frank act, the proposals

relating to the latter have been removed from the sample when the analysis was conducted.

The main difficulty of this thesis is to properly operationalize the outcome variable. In other words what is the best way to assert the financial distress of a firm. In order to assess the latter three different outcome variables will be computed and used. The outcome variables used are: *Z-score, O-score, and KMV model.*

Dichev (1998) investigated firm's bankruptcy risk via the use of Altman's Z-score and Ohlsons O-score. This research will replicate Dichev's procedure and use the same method to compute the Z-score and O-score.

Altman's Z measures the financial strength of a company. Moreover, it is one of the most commonly used metrics to assess a firm's financial distress. Its variables consist solely of accounting metrics. The Z-score is based on metrics that encompasses a firm's capacity to service its debt as well as measure to assess its performance. As mentioned earlier the Z-score is a measure of financial strength. Hence, a firm is in a better financial condition when it's Z-score higher (1968). On the contrary, a low result in the Z-score indicates potential problems in firms' activities and thereby a financial distress. The formula to compute the Altmans Z-score is the following:

$$Z = 1.2 * X1 + 1.4 * X2 + 3.3 * X3 + 0.6 * X4 + 1 * X5$$

$$\begin{cases} X1 = \frac{working\ capital}{total\ assets} \\ X2 = \frac{retained\ earnings}{total\ assets} \\ X3 = \frac{EBIT}{Total\ asset} \\ X4 = \frac{market\ value\ of\ equity}{book\ value\ of\ liabilities} \\ X5 = \frac{sales}{total\ asset} \end{cases}$$

Each determinant is computed separately after which each one is assigned it's own respective weights based on Altman's initial calculations. Note that the working capital is obtained by taking the difference of a firm's current asset and liabilities. Moreover the market value of equity is equal to a firms shares outstanding multiplied by it's fiscal price. Altman's Z is simple to compute due to information availability and it's computational simplicity. An ordinary-least-square

regression will be used to determine the relation between shareholder proposals on firms financial strength computed by the Z-score.

The O-score measures a firm's level of financial distress. Compared to the Z-score, it uses more variables, and is trickier to compute (Olhson, 1980). However, it also relies on accounting based metrics. There are two differences between the Z-score and the O-score. The later determines a firm to be in distress if its value is superior to 0.5, hence a higher value of the O-score indicates problems within firms. Moreover, a logistic regression will be used to conduct the O-score regressions; this is because the value of the outcome variable O-score is a dummy variable (1=firm is in distress if the value of the O-score is superior to 0,5; 0= firm is not in distress if the value of the O-score is inferior to 0,5). The formula to obtain Ohlom's O is the following:

$$O^{13} = -1.32 - 0.407 * log\frac{total\ assets}{GNP - index} + 6.03 * \frac{Total\ liabilities}{total\ assets} - 1.43 * \frac{working\ capital}{total\ assets}$$
$$+ 0.076 * \frac{current\ liabilities}{current\ assets} - 1.72\{if\ total\ liabilities > total\ assets; else\ 0\} - 2.3 * \frac{net\ income}{total\ assets}$$
$$- 1.83 * \frac{funds\ from\ operations}{total\ liabilities} + 0.285 * \{if\ netloss\ for\ last\ two\ years; else\ 0\}$$
$$- 0.521 * \frac{NI_t - NI_{t-1}}{|NI_t| - |NI_{t-1}|}$$

The formula contains two dummies. If firm's total liabilities are superior to its total assets it registers a decrease in the O-score of 1,72. Moreover the O-score increases by 0,285 if a firm has incurred a net loss over two consecutive years. Moreover, adding the depreciation expenses and subtracting the gain on sale of assets from a company's net income computes funds from operations.

The computation of the O-score is straight forwards and does not require complicate analysis or computational methods. Lastly, the GNP is computed by taking the ratio of the nominal GNP and the real GNP and multiplying that ration by 100.

The last outcome variable used within this research is the distance-to-default computed via the KMV model. It is a model that relies on both accounting

[13] GNP=national price index level; CL=current liabilities; CA=current assets; NI=net income; FFO=funds from operations

and market data to make prediction about a companies probability of default. Its foundation lies in the Black-Scholes model. This model assumes that a firm's equity is equal to the value of its assets. Therefore, a firm goes bankrupt if its asset value is not sufficient to service its debt. In order to obtain the bankruptcy probability of a firm the following procedures is done (Campbell, Hilscher, & Syilagyi, 2008).

The first step is to obtain the standard deviation of assets and the market value of assets. This will be done through the use of the Newton iteration process. This algorithmic manoeuver will be conducted in the statistical software MATLAB. Opting for the latter software is principally due to its simplicity of use and predetermined code to run the Newton algorithm. The starting values are set to the standard deviation of equity and the market value of equity respectively. The former is computed using the daily returns of a stock price for a year, while the latter is computed via the multiplication of a company's common share outstanding and it's stock price. The value of a firm's debt (D) is equal to the sum of its short-term debt and half of the long-term debt. The risk free rate (r) is obtained through the federal reserve bank of Saint-Louis. The time frame is set to one (T-t).

$$\begin{cases} V_E = V_A * N(d_1) - D * e^{-r*(T-t)} * N(d_2) \\ \sigma_E = \dfrac{V_A}{V_E} * N(d_1) * \sigma_A \end{cases}$$

Moreover, the values of d_1 and d_2 are borrowed from Black-Scholes option pricing theory:

$$\begin{cases} d_1 = \dfrac{\log\left(\frac{V_A}{D}\right) + \left(r - \frac{1}{2} * \sigma_A^2\right) * (T-t)}{\sigma_A * \sqrt{T-t}} \\ d_2 = d_1 - \sigma_A * \sqrt{T-t} \end{cases}$$

The starting value for the irritation is set equal to the value of equity for the value of assets. Furthermore, the standard deviation of assets is set equal to the standard deviation of equity.

The second step involves determining a company's default point. This occurs when a company's asset value falls below the value of it's debt. This step involves inputting the previously computed metrics into the equation shown below.

$$DD(t) = \frac{\log\left(\frac{V_A}{D}\right) + \left(r - \frac{1}{2} * \sigma_A^2\right) * (T - t)}{\sigma_A * \sqrt{T - t}}$$

The last step of the KMV model requires assessing a firm's probability of default by inputting the default point into a normal cumulative distribution function. Their values are inputted in the following formula to compute the default point:

$$DD(t) = \frac{\log\left(\frac{V_A}{D}\right) + \left(r - \frac{1}{2} * \sigma_A^2\right) * (T - t)}{\sigma_A * \sqrt{T - t}}$$

A logistic regression will be used when analyzing the effect of shareholder proposals on a company's risk of financial distress measured by the KMV model.

This research will include two control variables when regressing the O-score and the Z-score: size and book-to-market. These variables are included to better assess the relation between a company's financial distress and shareholder proposals. Moreover, these variables are borrowed from Dichev (1998). The main reason for their inclusion lays in their association with a firm risk of distress. The size variable is computed by taking the logarithm of company's asset total. The book-to-market variable is obtained dividing firms' book value of equity by its market value of equity. Due to the use of many data entries in the computation of the outcome variables it is very difficult to find control variables that are not highly correlated with the outcome variables and which help better explain the relation between a firms risk of financial distress and it's association to shareholder proposals.

Market based and economic wide control variables will be used within the KMV regression. The control variables that will be included are GDP growth, the inflation rate and the credit score of each firm. These variables will be included as they increase the explanatory power of the regression. Moreover, the KMV model is a market-based metric therefore market and macroeconomic indicators have more informational usefulness and increase the explanatory power of the regression. The size control variable will be kept in the KMV regression to control for firm size but the book-to-market variable will be omitted as it does not provide any additional power to the regression and obscures the results.

In order to analyze the predictive capabilities of shareholder proposals a difference-in-difference (DID) method of analysis will be applied.

This method separates the data in two separate groups: the treatment group and the control group. The former group will be composed of firms that at one point faced a significant marginal difference of submitted proposals in between two proxy seasons. It is important to grasp how a significant marginal difference is operationalized. A firm that experienced an increase or decrease of at least three shareholder proposals in between two proxy seasons will characterized as a treatment firm within our sample. Hence it will have experienced a significant marginal difference in the number of submitted proposals. The control sample will be composed of the remaining firms in the sample.

The reason for such a classification method has multiple advantages. The number of submitted proposals is firm specific. Exxon Mobil has a total of 120 shareholder proposals within our sample, and certain firms have less than 5 proposals throughout the sample period (i.e. Sunoco). Thus, by only looking at the annual amounts of submitted proposals certain firms could be omitted due to the small amount of proposals submitted by their shareholders. By looking at the marginal increases/decreases in the number of proposals this problem is alleviated as it controls for the average amount of submitted proposals for each firm. Intuitively, if proposals are a viable method of predicting a firm's distress, there will be a peak in proposals prior to the distress and there will be a significant drop in proposals after the end of the distress period.

Moreover each firm sample (control and treatment) needs to be divided in two subdivisions. This will create a total of four specific groups. Each group sample will be subdivided into a pre and a post phase. The method for the treatment group will be explained first after which the control group method will be detailed.

If a firm experiences a significant marginal increase in the number of submitted proposals within a certain year, the following three years will be determined as being the treatment firm post period. This entails that if a certain

firm experiences a significant increase [14] in the number of proposals in 2010, the years 2011, 2012 and 2013 will be determined as being the post period. As the predictive nature of shareholder proposals are being examined the year in which the increase in proposals has been noted will not be included in the post period as does not capture the predictive capabilities of proposals.

The opposite holds true for firms that experience a significant marginal decrease [15] in proposals. A firm that experiences a significant marginal decrease in the number of proposals in 2010 will see the years 2008, 2009 and 2010 being treated as the post period. The inclusion of the year, which saw the decrease in shareholder proposals, lies in the assumptions that shareholders believe that the years following a decrease in shareholder proposals will see a bettering of companies' performances.

Therefore, a firm that experienced an increase in proposals in 2007 and a decrease in 2011 will see the years 2008,2009, 2010, and 2011 as it's post period. The periods that are not encompassed within the post period will be the pre period.

The method by which the control groups are subdivided depends on the treatment group. Namely, firms are grouped into categories based on their industry via the use of the SIC codes[16]. The post period for control firms is set to all the periods in which a treatment firm from the same industry is in the post period. This method allows controlling for differences that can exist between industries. Hence, differences in size, leverage and profitability of different firms are accounted for.

The flowcharts below provide a visual depiction of the methodological procedure applied in each of specific hypothesis. It helps better understand the method by which observations are removed from computing the interest variables. It needs to be stressed that observations are removed when conducting the regressions; the observations are removed when determining the treatment firms for each hypothesis. The small number of sampled firm's does not allow for a large decrease in observations. Moreover, the methodological procedure allows testing

[14] An increase of at least three proposals.
[15] A decrease of at least three proposals.
[16] Standard Industry classification

the effect of a specific type of proposal against other proposal types and firm's that do not have any shareholder proposals.

Hypothesis 1

Hypothesis 2

Hypothesis 3

Hypothesis 4

Taken the above-mentioned information the regression equations that will be run within the scope of this thesis are the following:

$$\frac{Z-score}{O-score} = \beta_0 + \beta_1 treatmentfirms + \beta_2 prepost + \beta_3 DID + \beta_4 Size + \beta_5 Booktomarket + \epsilon$$

The outcome variables (Altman's Z and Ohlson's O) will be measure a firm's propensity of distress. The first three regression coefficients ($\beta_1, \beta_2, \beta_3$) are used to compute the difference-in-difference regression methodology where β_3 is the coefficient of interest. As in Dichev (1998), the regressions will include two control variables to augment the regression quality, as there is a well-documented association between the regression parameters presents.

Market metrics are the main input factors in computing the KMV model distance-to-default factor. Its regression equation that will be run is the following:

$$DtD = \beta_0 + \beta_1 treatmentfirms + \beta_2 prepost + \beta_3 DID + \beta_4 Size + \beta_5\, inflation + \beta_6 GDP + \beta_7 Creditscore + \epsilon$$

The outcome variable measures a firm's probability of default at a certain point in time. Three market based control variables are included in the regression. Its association with a firm's probability of distress is largely documented in previous academic literature[17]. The $Booktomarket$ variable is omitted as its omission increases the regressions explanatory power and diagnostics[18].

In order to compute the outcome variables that measure company's level of financial distress data had to be obtained from four different sources: *CRSP, Compustat, the Worldbank and the Federal reserve bank of Saint-Louis.*

The first two sources were accessed via the Wharton Research Data Service (i.e. WRDS), which is the most comprehensive source of financial data and is the most commonly used platform in academic research.

The *CRSP* data was used to obtain information relating to American stock prices. More specifically, the daily stock prices of firms were used in order to compute the standard deviation of stock, which is a primordial step in the computation of the KMV outcome variable.

The *Compustat* data was accessed in order to obtain balance sheet and income statement information of firms required to properly conduct the research.

The use of the two databases mentioned above is standard and appropriate in financial and accounting research.

The *Worldbank* data was accessed via the institutions website to retrieve information relating to macroeconomic indicators such as GDP growth and inflation figures for the United States.

The last database used is the *Federal reserve bank of Saint-Louis* that is a governmental site affiliated to the US central bank (i.e. US federal reserve bank). It offers objective and non-biased information relating to the overall US economy.

[17] See Dichev (1998), Lu, Zhao, Fang and Liu(2003), Lo and Lys(2000)
[18] The justification is detailed in the diagnostics section.

The variables obtained from their data were gross-national product information (GNP), which are required to compute GNP-index that is essential in the assessment of Ohlson's O. The last parameter obtained from the site was the risk-free interest rate that is necessary in the assessment of the KMV model.

This paper will go on to outline the main results of this research. Lastly, a conclusion will be provided.

VI. Results

In the following section the output from the regression analysis will be detailed and explained. This section will first outline the descriptive statistics. The main difficulties encountered during the regression analysis will be explained subsequently. It is important to discuss the problems that were encountered during the regression analysis to gain a better understanding about the interpretation of results. Hence, a certain level of prudence needs to be taken when examining the results. Without vigilance, the obtained results can potentially be misleading. Moreover, each of the hypotheses stated in the theoretical framework will be discussed individually. Lastly, the additional analyses that were conducted will be discussed.

a. Descriptive Statistics

The first table provides the summary statistics regarding the variables employed for the conducted research. It can be seen form the top panel that the number of firms that are considered as being treatment firm's slightly varies by hypothesis and outcome variables. Moreover, the number of observations prepost is fairly constant around 0,5. This entails that around half of observations are pre and half are post observations. The second panel shows that a high average value of the size variable (7,671), this follows consistently as only the 250 biggest US firm's are sampled. The low credit score value (1,272) is consistent with the idea that

bigger firm's generally tend to have lower credit risk[19]. As mentioned previously larger firms tend to have a lower probability of distress. This is paralleled with the mean values of the three outcome variables. The mean *logZscore* is high 1,066, which equates to 3,44 for the Z-score value. The distance-to-default is also low at 0,148. Moreover, the average O-score value is lower than 0,5 entailing that the sampled tend not to be in financial problems.

Table 1: Descriptive Statistics for the test variables

Panel A- Descriptive Statistics for the interest variables

	Hypothesis 1		Hypothesis 2		Hypothesis 3		Hypothesis 4	
	mean	*Stdev*	*mean*	*Stdev*	*mean*	*Stdev*	*mean*	*Stdev*
Z-score								
Treatmentfirms	0,171	0,376	0,208	0,406	0,239	0,426	0,239	0,426
Prepost	0,552	0,355	0,584	0,321	0,605	0,293	0,533	0,373
DID	0,051	0,220	0,061	0,240	0,066	0,247	0,066	0,247
O-score								
Treatmentfirms	0,179	0,384	0,213	0,409	0,242	0,429	0,154	0,361
Prepost	0,436	0,343	0,444	0,351	0,547	0,354	0,421	0,326
DID	0,053	0,225	0,061	0,239	0,066	0,249	0,039	0,195
KMV model								
Treatmentfirms	0,175	0,380	0,211	0,410	0,244	0,429	0,244	0,429
Prepost	0,580	0,325	0,557	0,351	0,620	0,271	0,492	0,406
DID	0,054	0,225	0,064	0,245	0,071	0,256	0,071	0,256

Panel B- Descriptive Statistics for the outcome variables and the control variables

	logZscore	*O-score*	*Distance-to-default*	*Book-to-market*	*Size*	*Inflation*	*GDP*	*Creditscore*
mean	1,066	0,446	0,148	3,018	7,671	1,479	1,826	1,272
Stdev	0,621	0,497	0,253	3,112	5,374	1,467	1,280	1,642

Panel A shows the mean and standard deviation of the interest variables for each hypothesis it's values change as the method applied to identify treatment firm's change with each specific hypothesis. Panel B provides the mean value and the standard deviations of the outcomes and control variables. *Stdev* is the standard deviation of the respective variable. *Mean* is the average value of the respective variable.

[19] A lower value of the *creditscore* variable is tending towards an actual credit score of "A".

b. Diagnostics

Notable shortcomings were identified for each of the analyzed outcome variables. A problem that needed to be resolved was the elimination of outliers from the analysis. This step is essential, as the inclusion of extreme data points would bias the results and the obtained regression coefficients would be misleading. The winsorizing technique was used to eliminate outliers. This technique infers that the most extreme in the dataset are omitted. In the scope of this research the extreme 1% of observations were excluded for the Z-score and the O-score. This means that 71 data points are eliminated for the Z-score and 53 observations are excluded for the O-score. A lower amount of omitted observations for the O-score is due to a lower amount of overall observations.

Numerous assumptions need to be fulfilled in order to use the ordinary least squared regression method to analyze the association between shareholder proposals and a firm's Z-score. Namely, the regression residuals need to be normally distributed, the variance of the residuals have to be homogeneous, no multicollinearity issues in the predictor variables and that a linear relation exists between the dependent variable and the independent variables. If the above-mentioned assumptions are not fulfilled the regression results can be biased and might not portray the true association between variables.

In order to check whether the residual of the Z-score regression are normally distributed two methods were used: the Kernel density plot and the Shapiro-Wilk test for normality. The Kernel density plot overlays the distribution of the regression residuals over a normal distribution. This method provides a visual assessment on whether a regression is normally distributed. The Shapiro-Wilk test numerically checks whether the regression residuals are normally distributed. A large p-value of the test would indicate that the regression residuals are normally distributed. The Shapiro-Wilk test is highly significant (0,000) and indicates that the residuals are not normally distributed. Moreover, the same conclusion is drawn from looking at the Kernel density plot, where the Z-score residuals are not in line with the normal distribution function.

In order to alleviate this problem, a logarithmic transformation of the Z-score is used, the logarithm of the Z-score. After using the logarithm of the Z-score as the outcome variable, the residuals of the regression become more normally distributed. The Kernel density plot shows that the regression residuals are closer to the normal distribution function (appendix figure 1). Moreover, the Z value of the Shapiro-Wilks test decreases by 6,933 points[20]. This goes to show that the regression residuals are more normally distributed. Thus, either the Z-score or its logarithmic transformation fulfills the assumption that their regression results are normally distributed.

Nevertheless, the p-value of the Shapiro-Wilks test is still significant. The non-normal distribution of residuals is due to the methodological procedure used to assess the research hypothesis. Namely, the difference-in-difference method of analysis uses three binary variables, which makes it infeasible to satisfy the normality of residuals assumptions. Nevertheless, this research will still use Altman's Z-score as an outcome variable because the main point of interest is the interpretation of the independent variables parameters. An OLS regression with dummy variables reports unbiased regression estimates that enable their interpretation. Moreover, the logarithmic of the Z-score provides a better distribution and enables a better interpretation of the hypotheses and thereby more focus will be centered on interpreting logarithm of the Z-score as opposed to Altman's Z-score.

Another assumption that needs to be fulfilled is the homoscedasticity [21]of residuals. This assumption entails that the variance of the residuals is homogeneous. In order to test this assumption the Breusch-Pagan test for heteroskedasticity is used. It is a common statistical method used to test whether the variance of residuals is homogeneous. The 6th table in the appendix shows that the p-value for the Breusch-Pagan test for heteroskedasticity is statistically

[20] The Z-score of the Shapiro-Wilks test for Altman's Z as outcome variable is 12,680. After logarithmically transforming the Altman's Z, the Z-score of the [20] [20] 18 Shapiro-Wilks test drop to 5,747 indicating that the residuals of the latter regression are more normally distributed. (Appendix figure 2)

[21] The homoscedasticity assumption implies that the error term is the same across all values of the independent variable.

significant at a 1% confidence level (0,000). Thereby inferring that the variance of residuals is not homogeneous. Furthermore, the test is performed for both the regression using the Z-score as outcome variable and it's logarithmic transformation. The logarithmic transformation of the Zscore yields a better constant variance of residuals due to a lower value of the chi-square test (40,31<62,39). As for the previous assumption of normality, the difference-in-difference method of analysis heavily affects the results for the Breusch-Pagan test and the homoscedasticity assumption. To correct for heteroskedasticity, the regression standard errors are adjusted and corrected by using 'robust' standard errors. When applying the 'robust' function in STATA, vce(robust), the standard errors are corrected for heteroskedasticity.

The independence of variables is an assumption that needs to be fulfilled. If the regression parameters would be correlated one to another, the regression coefficients would not yield correct values. Moreover the standard error of the regression would increase exponentially. In order to test the collinearity of the independent variable several test were used. The *collin* command in STATA enables testing the collinearity of multiple variables. The Collinearity diagnostics column in the 6th appendix table shows that no collinearity issues exist. The variance inflation factor[22] for all independent variables are low and smaller than 2. As a rule of thumb, solely the variables that have a variable inflation factor greater than 10 merit detailed attention. Hence, no collinearity problems are observed between the independent variables the regressions concerning Altman's Z.

The two remaining outcome variable are computed by means of a logistic regression. The use of a logistic regression entails that ordinary-least-square regression assumptions can be relaxed. Nevertheless, other requirements need to be fulfilled in order to interpret its regression coefficients.

The most important requirement that needs to be fulfilled is to have no specification error entailing that the logistic regression includes all necessary predictor variables. Moreover, the association between the independent and

[22] The variance inflation factor is methodological procedure that quantifies the severity of multicollinearity in a regression analysis.

dependent variables needs to be of a logistic nature. In order to determine whether the regressions using the KMV model and Olhoms O are correctly specified the STATA *linktest* command is used. The *linktest* function verifies whether a logistic regression is correctly specified and that no variables are missing from the regression. When running the previously mentioned test two important values are displayed: the linear predicted value (*_hat*) and the linear predicted value squared (*_hatsq*). The former should display a small and statistically significant p-value as it verifies that the regression follows a predicted logistic pattern. The latter should have a large and statistically insignificant p-value as it checks whether any important variables have been omitted from the regression. From a practical perspective a large p-value for *_hat* means that the previously run logistic regression is completely misspecified and the regression should be not be assessed as it is completely biased. Moreover, a small and statistically significant p-value for *_hatsq* entails that the logistic regression could have omitted an important independent variable.

Another important assessment that needs to be conducted regarding a logistic regression is how well a logistic regression fits it's underlying data. In other words, the goodness-of-fit of the logistic regression needs to be assessed. It is important to determine whether a regression fits the underlying data correctly. If a certain regression does not fit the data correctly, it is necessary to individually judge whether the previously used regression method is appropriate. In order to test the goodness-of-fit of a logistic regression three different tests will be used: Hosmer and Lemeshow's goodness-of-fit-test, Akaike's information Criterion (AIC) and the Bayesian Information Criterion (BIC). Each of the previously mentioned techniques assesses the goodness-of-fit of a certain regression using a different method. These methods are common in assessing a regression's goodness-of-fit. This research will principally rely on Hosmer and Lemeshow's goodness-of-fit test, as it is easier to interpret. It compares if the predicted frequencies of a regression match the observed frequencies. Therefore, the higher the degree of similitude between the observed and predicted frequencies the higher a regression's goodness-of-fit. Moreover, if the p-value of the test is insignificant and of a high

value this provides strong evidence for the case that a certain regression fits well the underlying data.

Lastly, the linear independencies of predictor variables are tested. The method to test for the collinearity of independent variables is the same as for an ordinary-least-square regression. Therefore, the collin function from STATA to determine the variance inflation factor (VIF) of the independent variables is used.

The 7th appendix table shows no specification errors regarding the O-score regressions. The value of _hat is small at statistically significant at a 1% confidence level (0,000) entailing that the model is not misspecified. Moreover, _hatsq is large and statistically insignificant (it's p-value varies in between 0,715 and 0,950). Hence, no explanatory variables are omitted from the regression. Therefore, one can infer that the logistic regressions having the O-score as the explanatory variable has no specification errors.

On the other hand, the O-score regressions face a goodness-of-fit problem. The 9th appendix tables shows that for each hypothesis Hosmer and Lemeshow's goodness-of-fit test is statistically significant at a 1% confidence level (0,000) entailing that the regression line does not fit the data well. It needs to be noted that the pseudo R-square of the regression is fairly constant [23](slightly lower than 10%). This indicates that a tenth of the observed variations can be explained by the regressions. Moreover, only a limited amount of control variables are used within the regression, which significantly lowers it's goodness-of-fit. Furthermore, the construction of the outcome variable heavily affects the regression's fit with the observations as a certain threshold is used to divide the O-score in two categories[24]. Nevertheless, this does not bias the interpretation of the regressions coefficients. Hence, inferences can be made from the logistic regressions conducted for the O-score.

[23] The pseudo R-square for the 2nd hypothesis is 8,92% and 9,5% for the 1rst hypothesis.

[24] A threshold of 0,5 is used to divide firms in two categories. Firms with an O-score smaller than 0,5 are in the first category showing little risk of financial distress. Firms with an O-score higher than 0,5 are categorized as having a high risk of financial distress.

When testing for collinearity issues of the independent variables in the O-score regressions no concerns were to be found (Appendix table 9). None of the independent variables has a VIF factor close to 10 (the highest being 1,8).

The 10th appendix table shows that the regressions using the KMV model as an outcome variable are not misspecified as the values _hatsq are statistically significant at a 1% confidence level (0,000). Nevertheless, _hatsq has a lower value compared to the Oscore. Moreover, it is statistically significant[25] for all four hypotheses. This could entail that these regressions are potentially missing certain explanatory variables. Nevertheless, it needs to be remembered that the KMV model is not a binary variable. It computes the probability of bankruptcy of a firm within a certain year and the majority of firms have a low probability [26]of distress as most firms are situated on the left side close of the distribution showing a minimal percentage probability of distress. However, there is a small amount of firms that have a high likelihood of bankruptcy. The main problem when running these logistic regressions is that the outcome variable KMV is not a perfectly binary; therefore it does encounter some minor misspecification problem. Nevertheless, these problems are not major as the results of the KMV regressions can be corroborated by the results of the O-score and Z-score.

The logistic regression line of KMV model is aligned with the observations. This is corroborated by the Hosmer and Lemeshow's goodness-of-fit test (Appendix table 11), which shows large and statistically insignificant p-values for all hypotheses [27]. Moreover, the AIC and BIC value are reported low and corroborate the results of the Hosmer and Lemeshow's test. Moreover, the pseudo R-square for the KMV model regressions is slightly higher than 25% showing that the regression follows fits well into the observations.

[25] For the 1rst, 3rd and 4th hypothesis is significant at a 10% confidence level and at a 5% confidence level for the 2nd hypothesis.
[26] This is as expected as these are the 250 biggest US firms, and bigger firms generally tend to have a lower probability of bankruptcy (Dichev,1998).
[27] 1st hypothesis p-value = 0,413 / 2nd hypothesis p-value = 0,206 / 3rd hypothesis p-value = 0,102 / 4th hypothesis p-value = 0,58

As for the O-score, the regressions using the KMV model as outcome variables do not have any problems of collinearity. The highest VIF value for an independent variable was 1,35, which is very low (Appendix table 12).

c. Regression results

In the following section the regression results will be detailed and interpreted. Each hypothesis will be investigated separately by individually assessing each outcome variable. The sample window used runs from 2007 until 2016[28].

In order to estimate the effect of shareholder proposals on a firms potential financial distress, the logarithmic transformation of the Altman's Z will be the preferred outcome variable compared to the original Altman's Z. The former outcome variable residuals better fit the normality conditions compared to the latter. Moreover, the regressions using the vce(robust) command have a higher explanative power as they control for the homogeneity of the variance of the regression residuals[29]. It is important to note that the higher level of Altman's Z indicates a firms lower probability of financial distress. Adversely, a higher level of Olhoms O-score indicates a higher probability of distress. This entails that a positive value of interest variable coefficient indicates a higher probability of distress. Hence, the coefficients of the regression using the O score should be adversely interpreted compared to the Z score. The KMV model computes the distance-to-default, which is used as the outcome variable. It's computes the probability that a firm will not be able to service its debt in a certain. Hence, a higher distance-to-default value indicates a higher probability of distress. This means that a positive value of the independent variables coefficients indicate a positive association between that variable and a firm's probability of a financial distress.

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[28] Although data is available for the proxy season 2006, the latter year is left out of the analysis as no inferences can be made regarding the increases or decreases in shareholder proposals in that year as no shareholder data is available for the years prior to 2006.

[29] In reference to the 1st and 2nd appendix figures.

The first hypothesis investigates the aggregation of all shareholder proposals submitted within our sample and it's relation to a firm financial distress. It is important to mention that the significant marginal differences that are used for the first hypothesis are -4 and 4. This is done is order to have an equal amount of firms in the control and treatment sample. If the usual -3 till 3 marginal differences were taken to estimate treatment firms, the majority of firms within the sample would have been considered treatment firms. This effect is principally due to the Dodd Frank legislation enactment in 2011 that led to a peak in shareholder proposals in that year. The use of a higher level of significant marginal differences reduces the effect of the Dodd Frank act. The second table reports the results when taking both the marginal increases and marginal decreases together. The table is divided into two parts: panel A reports the regression results for all the firms within the sample. In the 2nd panel (i.e. Panel B) certain industries are removed from the regression as none of the respective firms had a significant marginal difference in shareholder proposals between two proxy seasons. The variable of interest in the table is DID as it shows the between sample and between period effect of shareholder proposals on firm's probability of being in a financial distress.

Table 2: Regression results for the 1st hypothesis

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,072***	0,000	4,451**	0,041	14,416***	0,000
Treatmentfirms	0,21***	0,000	0,32***	0,000	15,499	0,992
Prepost	-0,057	0,151	2,458***	0,000	0,747	0,351
DID	-0,041	0,508	-2,558***	0,000	-15,919	0,992
Size	-0,2***	0,000	-0,494***	0,000	-0,836***	0,000
Book-to-market	0,001**	0,040	0,006**	0,048	/	/
Inflation	/	/	/	/	-0,482***	0,002
GDP	/	/	/	/	0,594***	0,000
Creditscore	/	/	/	/	-0,047	0,379
Adj./Pseudo R-square	10,70%		9,5%		24,72%	
Observations	1980		1955		2518	

Panel B- After removing industry with no treatment firms

	Log Z-score	*O-score*	*Distance-to-Default*

Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,66***	0,000	5,188***	0,000	13,928***	0,000
Treatmentfirms	0,226***	0,000	0,376**	0,017	15,487	0,991
Prepost	0,236***	0,000	2,428***	0,000	1,031	0,203
DID	-0,064	0,297	-2,533***	0,000	-15,934	0,991
Size	-0,186***	0,000	0,567***	0,000	-0,819***	0,000
Book-to-market	0,001**	0,037	0,006**	0,047	/	/
Inflation	/	/	/	/	-0,481***	0,002
GDP	/	/	/	/	0,595***	0,000
Creditscore	/	/	/	/	-0,048	0,374
Adj./Pseudo R-square	9,62%		10,60%		24,62%	
Observations	1833		1809		2416	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable.

The results for the first hypothesis do not produce any significant results. Although the interest variable coefficient DID are negative and statistically significant at a 1% confidence interval for the O-score regressions indicating that a significant difference in the number of submitted proposals between two proxy seasons leads to a lower probability of the firm facing a financial distress. Nevertheless, this result is not corroborated by the distance-to-default regression (i.e. KMV model), which reports a highly insignificant value (0,992 and 0,991). The results for Altman's Z are statistically insignificant as well[30]. Moreover, little or no changes are reported when eliminating certain industries from the regression sample as the regression coefficients remain of similar and their statistical significance remains unchanged.

Additional manipulations have been done in order to gauge the effect of each marginal difference separately. It should be noted that only the marginal increases or decreases are taken into account, and the other marginal differences are omitted from the regression in order to control for cofounding effects[31]. This resulted in the removal of 309 observations for the Z-score, 298 observations for the O-score and 650 observations for the KMV regression when examining the

[30] P-value: 0,508 & 0,297

[31] When assessing the effects for firm's that experienced a marginal increase in shareholder proposals, firm's that have experienced a marginal decrease in shareholder proposals are omitted from the regression in order to eliminate confounding effects (vise versa).

effect of a significant marginal increase in shareholder proposals. Even more observation had to be omitted when assessing a significant marginal decrease in shareholder observations: 397 observations for the Z-score, 390 observations for the O-score, and 469 observations for the KMV regression.

Table 13 in the appendix reports the results for all marginal increases in shareholder proposals. The reported regression results do not vary much with the overall sample reported in table 1. Namely, the interest variable coefficient of the O-score is statistically significant and negative (at a 1% confidence level). Nevertheless, the coefficients of KMV and the Z-score are highly insignificant (0,514 and 0,919) and have a positive value. Although, a significant amount of observations have been eliminated the R-square remain fairly constant[32].

More compelling evidence are obtained when assessing the marginal decreases in shareholder proposals. Namely, the KMV regression coefficients are negative (-1,074 and -1,126) and close to statistical significance (0,132 and 0,119). This is in line with the O-score regression result where the interest variable is statistically significant at a 1% confidence level and negative (-2,505). The DID variable is highly insignificant for the regression using Altman's Z as the outcome variable (0,763).

Whether to reject the null or accept the null for first hypothesis is not a straightforward task. Nevertheless, looking at the above-mentioned arguments the null of the first hypothesis should not be rejected. This entails that no association exists between a firms probability of distress and shareholder proposals when looking at the aggregation of all proposals. It needs to be mentioned that the O-score provides some evidence for the case that there is an association. Nevertheless, these results have not been corroborated by any of the two remaining outcome variables.

The second hypothesis investigated the relation between governance and performance proposals and the propensity of firm's facing financial distress. In compute the number of governance and performance proposals submitted each year by shareholders certain proposals were omitted from the computation.

[32] There is a 4,11% decrease in the pseudo R-square of the KMV model, but it still remains very high (20,61%).

Proposals relating to social policies were not taken into account. Furthermore, proposals submitted by a firm's management were also omitted. Lastly, "say-on-pay" proposals were also omitted as they as are mainly due to the enactment of the Dodd Frank legislation. [33]If a firm faced an increase of at least three proposals compared to the prior year it will be determined to have had a significant marginal increase in the number of submitted proposals. Moreover if a firm faced a decrease of at least three submitted proposals it will be determined to have had a significant marginal decrease in the number of submitted proposals.

Table 3: Regression results for the 2nd hypothesis

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,982***	0,000	4,207***	0,000	13,24***	0,000
Treatmentfirms	0,099**	0,013	0,021	0,886	-1,607***	0,004
Prepost	-0,119***	0,007	2,295***	0,000	0,299	0,710
DID	0,001	0,997	-2,15***	0,000	0,232	0,696
Size	-0,184***	0,000	-0,465***	0,000	-0,624***	0,000
Book-to-market	0,001**	0,068	0,007*	0,051	/	/
Inflation	/	/	/	/	-0,465***	0,003
GDP	/	/	/	/	0,608***	0,000
Creditscore	/	/	/	/	-0,0498	0,156
Adj./Pseudo R-square	9,45%		8,92%		24,16%	
Observations	1980		1955		2518	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,958***	0,000	4,489***	0,000	13,198***	0,000
Treatmentfirms	0,102***	0,010	0,002	0,988	-1,604***	0,004
Prepost	-0,088**	0,068	2,265***	0,000	0,314	0,697
DID	-0,002	0,972	-2,119***	0,000	0,23	0,699
Size	-0,185***	0,000	-0,49***	0,000	-0,622***	0,000
Book-to-market	0,001*	0,069	0,007**	0,051	/	/
Inflation	/	/	/	/	-0,465***	0,003
GDP	/	/	/	/	0,609***	0,000
Creditscore	/	/	/	/	-0,05	0,365

[33] The above-mentioned proposals are omitted, as they are not shareholder proposal relating to governance and performance.

Adj./Pseudo R-square	9,00%	9,26%	24,08%
Observations	1944	1920	2500

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable.

The reported regression coefficients in the table above report the results of the second conducted hypothesis. It can be seen from the table that the interest variable coefficients of the Z-score and Distance- to-default are statistically insignificant in both panels. While the results for the O-score regression are statistically significant and negative. The results of the O-score regression might portray that a significant difference in the number of submitted shareholder proposals is related to a lower probability of a firm facing a financial distress. Nevertheless, this result is corroborated by neither of the two other outcome variable regressions. Moreover, no significant differences between the two reported panels are observed, as only a minimal amount of firms [34]are omitted for the panel B regression, thereby not influencing the regression coefficients and it's p-values.

The 15th and 16th tables report the results for marginal increases and decreases in proposals, respectively. Both figures show little or no differences in the variable of interest compared to the 3rd table. The statistical significant and negative value of the of the O-score regression coefficients are not confirmed by the other two regression results.

The null of the second hypothesis cannot be rejected and the alternative has to be dismissed. This is adverse to the developed expectations. The results for the second hypothesis indicate that there is no link between governance and performance proposals and firm's propensity to be in distress.

The third hypothesis investigates proposals submitted by knowledgeable investors. These investors are perceived as having more expertise and experience. Moreover, their main perceived concern is maximizing shareholder wealth. These

[34] 1,8% of observations are deleted for the Z-score and O-score regressions and 0,7% of observations are removed for the distance-to-default regression.

types of investors are mainly institutional investors and funds. Hence, certain types of proponents needed to be omitted in the computation of the significant marginal increases and decreases. Proposals submitted by company's management and individual investors have been omitted. A company's management is not considered as being an external shareholder, moreover almost the entirety of their proposals relate to "say-on-pay" proposals. Proposals submitted by individuals that are not gadfly investors have been omitted. These investors are not perceived as being knowledgeable investors, as they do not have the ability to gather all the necessary information relating to an investing decision. Furthermore, proposals submitted by public policy interest groups and "Social-others" group are omitted. The former is omitted as they follow a personal agenda that is entirely focused on promulgating social goals and not maximizing shareholder wealth. The latter is omitted because its proponents are social activists such as PETA [35]or the Nathan Cummings foundation[36]. Their main goal is not to foster shareholder wealth maximization and therefore their proposals are omitted when measuring significant marginal differences.

Table 4: Regression results for 3rd hypothesis

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,137***	0,000	3,69***	0,000	13,123***	0,000
Treatmentfirms	0,253***	0,000	-0,376***	0,007	-0,786	0,207
Prepost	-0,184***	0,000	2,325***	0,000	1,013	0,214
DID	-0,057	0,339	-2,221***	0,000	-1,193**	0,039
Size	-0,197***	0,000	-0,403***	0,000	-0,667***	0,000
Book-to-market	0,001	0,168	0,007*	0,056	/	/
Inflation	/	/	/	/	-0,481***	0,003
GDP	/	/	/	/	0,598***	0,000
Creditscore	/	/	/	/	-0,067	0,221
Adj./Pseudo R-square	11,56%		9,19%		24,16%	
Observations	1980		1955		2518	

[35] This organization solely focuses on animal rights campaign.
[36] This foundation tries to promote diversity and cultural awareness as well raise awareness regarding the poor.

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,122***	0,000	3,97***	0,000	13,196***	0,000
Treatmentfirms	0,256***	0,000	-0,399***	0,004	-0,594	0,345
Prepost	-0,156***	0,001	2,293***	0,000	1,759**	0,037
DID	-0,059	0,304	-2,189***	0,000	-1,244**	0,033
Size	-0,199***	0,000	-0,428***	0,000	-0,741***	0,000
Book-to-market	0,001	0,117	0,007*	0,056	/	/
Inflation	/	/	/	/	-0,483***	0,003
GDP	/	/	/	/	0,597***	0,000
Creditscore	/	/	/	/	-0,07	0,203
Adj./Pseudo R-square	11,33%		9,58%		24,08%	
Observations	1944		1920		2473	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable.

Regression results of the Z-score are reported in the first column of the table above. It can be seen that it's reported interest variable coefficients is statistically insignificant (0,339 and 0,304). The results relating to the O-score regressions are reported in the 2nd column. They show that the interest coefficients are negative and statistically significant at a 1% confidence level. This entails that after a significant marginal increase in proposals and prior to a significant marginal decrease in proposals firms have a lower probability of facing a financial distress. The results of the O-score are corroborated by the distance-to-default regressions (3rd column). Both panels show that the coefficients of the interest variable are negative and significant at a 5% confidence level. Moreover, the pseudo R-square is high and slightly lower than 25%.

The 17th table in the appendix reports the regression results for marginal increases in shareholder proposals and yields surprising results. Both the Z-score and O-score regression have negative and statistically significant coefficients at a 1% confidence level. The Z-score regressions indicate that a firm faces a higher likelihood of financial distress in the period following a marginal increase in shareholder proposals. On the other hand, the O-score regression reports opposing results and that following an increase in shareholder proposals firms have a lower

probability of distress. These results clearly contradict each other. Nevertheless, in the sensitivity analysis section it will be shown that the results for the Z-score are insignificant. The reason for this contradiction lies in the nature of the Z-score and O-score. These variables have been developed at a time where the biggest firms where all manufacture based. Hence, these outcome variables should only be used for the following manufacturing industries, based on their Standard Industry classification codes: 1-3999 and 5000-5999. The regression used for the sample above is comprised of financial service firms, which deeply bias the outcome variable and the regression coefficients. In the sensitivity analysis, solely manufacturing firms will be used to assess the Z-score and the O-score. Those regression results will show that the Z-score coefficients that are currently significant will become insignificant while the O-score coefficients will remain significant.

The regression results for marginal decreases in shareholder proposals are reported in the 18th appendix table. The negative and statistically significant values of the O-score regression are not corroborated by any of the two remaining outcome variable regressions.

The third hypothesis of this thesis cannot be rejected. The results of both the O-score and the KMV model are negative and statistically significant entailing that firms which face a significant increase or decrease in shareholder proposals submitted by knowledgeable proponents will have a lower probability of facing a financial distress.

The last hypothesis that is investigated in the scope of this thesis relates to 'governance and performance' proposals submitted by knowledgeable investors. It is a combination of the second and third and it is the most restrictive hypothesis in the scope of this research. The restrictions that are applied to the 2nd and 3rd hypothesis are jointly applied to determine the governance and performance proposals that are submitted by knowledgeable shareholders. It is believe that this hypothesis will produce the most significant results.

Table 5: Regression results for 4th hypothesis

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,028***	0,000	3,903***	0,000	13,858***	0,000
Treatmentfirms	0,248***	0,000	-0,297*	0,073	-0,667	0,279
Prepost	0,068*	0,074	2,422***	0,000	0,091	0,911
DID	-0,077	0,180	-2,094***	0,000	-1,17**	0,046
Size	-0,208***	0,000	-0,43***	0,000	-0,662***	0,000
Book-to-market	0,001	0,139	0,007*	0,053	/	/
Inflation	/	/	/	/	-0,49***	0,003
GDP	/	/	/	/	0,608***	0,000
Creditscore	/	/	/	/	-0,066	0,218
Adj./Pseudo R-square	11,22%		9,31%		24,07%	
Observations	1980		1955		2518	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,96***	0,000	4,19***	0,000	13,818***	0,000
Treatmentfirms	0,253***	0,000	-0,315*	0,058	-0,574	0,356
Prepost	0,109***	0,007	2,39***	0,000	0,383	0,644
DID	-0,083	0,149	-2,05***	0,000	-1,216**	0,040
Size	-0,206***	0,000	-0,456***	0,000	-0,683***	0,000
Book-to-market	0,001	0,141	0,007*	0,053	/	/
Inflation	/	/	/	/	-0,507***	0,002
GDP	/	/	/	/	0,628***	0,000
Creditscore	/	/	/	/	-0,067	0,212
Adj./Pseudo R-square	11,26%		9,67%		24,08%	
Observations	1944		1920		2473	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable.

The table-above shows that Altman's Z regression do not yield a significant values for the interest variable of the 4th hypothesis (0,180 and 0,149), therefore its values can be attributed to luck. On the other hand, the O-score regression produces statistically significant (1% confidence level) and negative coefficients (-2,094 and -2,05). Furthermore, the KMV model regression reports the same

outcome. It shows that the interest variable is statistically significant (5% confidence level) and has negative coefficients (-1,17 and -1,216).

The 19th and 20th appendix figures report the results for marginal and decreases in shareholder proposals respectively. Neither of the coefficients of the Z-score and the KMV model are statistically significant. On the other hand, the O-score regressions are statistically significant at a 1% confidence level and negative.

The final hypothesis of this thesis cannot be rejected, as both the O-score and the KMV model are negative and statistically significant. Nevertheless, the results for the final hypothesis are not more exaggerated than the 3rd hypothesis results.

c. Control Variables

Within the scope of this research numerous control variables are used to complement the regressions and augment their quality. The effect of these variables on the outcome variable will be assessed in the following section.

The *size* control variable that is present for all regression is statistically significant (1% confidence level) and negative. This indicates a negative correlation between the size of a firm and it's propensity to face a financial distress. This comes as no surprise as many academic have shown that large capital structure is associated with a lower risk of default (Titman & Wessels, 1988).

The variable measuring the book value of a firm compared to its market value (*book-to-market*) is used for Altman's Z and Ohlson's O regressions. Its significance varies; it is significant for the 1st and 2nd hypothesis and only significant for the O-score for the last two hypotheses. Nevertheless, its coefficient value is close to zero (generally around 0,001) this entails that the book to market value has little effect on a firm's risk of financial distress.

The KMV model regression used three additional control variables: *inflation, GDP and credit score.* A negative and statistically significant relation was found between the US inflation rate and the risk of financial distress. This entails that a higher inflation rate is associated with a lower chance of financial distress. On the other hand, a positive and statistical significance was found for *GDP,* which is contradictory; it is expected that GDP grows is associated with the bettering of firm's performances. Nevertheless, our sample consists of three years in which the

GDP decreased (2008,2009,2010) and more firms experienced a financial distress during periods of GDP growth, as it is a longer period. In turn, this led to a positive association between GDP and a firm's distance-to-default. A firm's *credit score* has a negative coefficient entailing that a firm with a better credit score has a lower probability of distress. Credit scores are a measure of a firm's ability to service its debt and it's overall health and it is therefore plausible that it has a negative coefficient.

The sensitivity analysis will show the additional procedures conducted, that were conducted in order to confirm the regression results. Lastly, a conclusion will be provided.

d. Sensitivity analysis

This section will provide additional argument to answer the research question of this thesis by providing more evidence. In this regard, additional manipulations have been made in order to assess the quality of the difference-in-difference method of analysis used and obtained results.

It is important to note that the Z-score and the O-score were developed for manufacturing firms. This entails that the reported values of the Z-score and O-score do not portray the true risk of financial distress for non-manufacturing firms. In order to increase the relevancy of regressions for the Z-score and O-score, non-manufacturing firms will be omitted from the computed sample. The same procedure as in Dichev (1998) will be used. Therefore, the firm sample will be restricted to firm's that have a SIC in between 1-3999 and 5000-5999[37]. Hence, service firms will be omitted from the sample.

Table 21 in the appendix outlines for regressions only using manufacturing firms. Each panel provides the regression results of one of the four hypotheses. In none of the four panels the coefficient of interest is close significant for the Z-score regressions[38]. On the other hand, all panels show a statistical significant (1%confidence level) and negative value of the O-score interest variable. Compared

[37] These firms are characterized as being manufacturing firms by the Standard classification code.
[38] The closest to significant is 0,297 for the 4th hypothesis and it is the most insignificant for 2nd hypothesis.

to the results outlined in the main section, it can be seen that the regression using Altman's Z is insignificant and it's coefficients can therefore not be interpreted. Moreover, the regressions using manufacturing firms are more reliable, their pseudo R-square increases by around 5% for the 2nd, 3rd, and 4th hypothesis and by 10% for the 1st hypothesis. Additionally, the goodness-of-fit of the O-score regression also improves when regression manufacturing firms. Interestingly, the significance and coefficient value do not alter for the O-score, while they loose their significance for the Z-score, showing that the Z-score regression results reported in the main section have to be assessed with great care.

In order to test the appropriateness of the sample window used, a wider sample window was used to run the distance-default regression. The sample window was enlarged to include the years: 2004, 2005 and 2006. The KMV regression was used to conduct these regressions as it's restricted sample has certain omitted variable values.[39] Nevertheless, no shareholder proposal data was available for these years, therefore its value was set to zero for the regressions[40]. The wider sample window reports (figure 18 appendix) missing variables values for the 2nd hypothesis for marginal decreases and for the 3rd and 4th hypothesis marginal increases, therefore the larger sample window does not shed light on certain missing variable values in the restricted sample. More importantly, these newly run regressions decrease in quality. The Hosmer and Lemeshow goodness-of-fit test is significant showing that the regressions do not fit with the available data; the *linktest* _hatsq value and the pseudo R-square sharply decrease entailing that the regression quality decreases compared to the restricted sample (2007-2016).

Widening the sample window with the KMV model tests the appropriateness of the restricted sample window. Regressions diagnostic of the larger sample window are inferior to restricted sample window and do not provide any additional information about missing variables in the shortened sample.

[39] The marginal increases and decreases in shareholder proposals were tested as these regressions have the most missing variable information.
[40] The variables *prepost*, *treatmentfirms* and *DID* were all set equal to zero for the years 2004, 2005, 2006. This assumption is unrealistic as no variations in shareholder proposals are determined in this three-year period.

Widening the sample window for the KMV model regressions show that the restricted sample window used in the main analysis is the most appropriate sample window and yields reliable variable coefficients relating to the relation between shareholder proposals and firm's risk of financial distress.

An additional analysis was performed in order to restrict the post-period for control firms for the difference-in-difference test. Previously, only one treatment firm needed to be in a post-period in order for the corresponding industry treatment firms to be classified as being in the post-period. In order to restrict and thereby test this method, the same difference-in-difference method will be used with a twist. In order to classify control firms within an industry as being in the post-period, at least two treatment firms from the same industry needed to be in the post-period in the same year. This method will test whether the previously used technique to determine the post-period control firm's is appropriate. Table 23 in the Appendix presents the regression results.

Industries that do not have at least two treatment firms that faced a significant marginal increase or decrease in shareholder proposals are not presented in the 23rd table. Moreover, a significant amount of observations that are deleted as many industry only present one firm that faced a significant marginal difference in shareholder proposals. The reported results show that the interest variable coefficients for the Z-score remain statistically insignificant[41]. Moreover, the R-square of its regression decreases entailing that the regression does not match the observations (highest R-square= 3,03%). The Distance-to-default and O-score regressions report statistically significant (10% confidence level and 1% confidence level) and negative value for the variable of interest (-1,062 and -2,224) for the 3rd hypothesis. However, the KMV model reports negative (-0,847) and statistically insignificant value for the 4th hypothesis interest variable (p-value=0,148). The O-score interest variables remain statistically significant for all hypotheses. Moreover, it's R-square increases significantly compared to the results reported in the results section.

Table 23 shows the difficulty faced when assessing the classification method for industries that face a significant difference in shareholder proposals.

[41] The closer p-value to statistical significance for the Altman's Z is 0,171.

Nevertheless, these results show that the 3rd hypothesis results are stable. Due to the limited amount of data available the use of one firm per industry is judge correct.

Augmenting the level upon which a firm is considered having a significant marginal increase or decrease in shareholder proposals is increased by one unit. Hence, a firm is considered as having a significant marginal increase in shareholder proposals if it faces an increase of at least four proposals prior to the previous year. A firm will be considered as having a significant marginal decrease in shareholder proposals if it faced a decrease of at least four proposals compared to the prior year. The results for the regressions of the above-mentioned procedure are reported in the 24th table. It needs to be mentioned that only the second, third and fourth hypothesis are computed as the first hypothesis already uses the same values to compute a significant marginal increase or decrease in shareholder proposals.

The reported results are after the removal of non-treatment industries, as the number of observations significantly decreases the R-square of each regression increases. Interesting results are found for the 3rd hypothesis were the interest coefficients for Altman's Z are negative (-0,423) and statistically significant (1% confidence level). On the other hand, the O-score interest variable is statistically insignificant (0,158) but remains negative (-0,91). While the KMV model, DID is negative (-1,256) and statistically significant (10% confidence level). Nevertheless, these results are obtained without removing non-manufacturing firms that have a large effect on Altman's Z and deeply bias its results.

This additional test shows that the increased level upon which a firm is considered to have a significant difference in shareholder proposals deeply affects the results. Nevertheless, the variation of three used to obtain the main results is justified as it allows the entry of smaller firms in the treatment sample and does not limit it's test to large firms that tend to have larger variation in shareholder proposals.

The method by which the post-period for control firms is determined has been tested. The sample window runs from 2007 until 2016. Moreover, the

financial crisis that the US experienced ran from 2007 till 2010[42]. Hence, another method by which the post-period for control firms can be determined is to equal the post-period to the period of the US financial crisis.

The results of this procedure are reported in the 25th appendix table. The interest variable coefficients for Altman's' Z and the O-score are statistically insignificant for all four tested hypotheses. Moreover, the pseudo R-square of the O-score regression drops below 5. On the other hand, the KMV model reports statistically significant (5% confidence level) and negative for DID for the 3rd and 4th hypothesis. Moreover, the linktest of the O-score and goodness-of-fit of the KMV model regressions decrease in quality, entailing that the obtained regression results are biased and the regression line does not align with the observations.
These results prove that using the financial crisis event window to determine the post-period for treatment firms is inappropriate. This is due to the fact that not all firms experienced worsening results during the financial crisis. Moreover, there are variations in performance in between industries. The above-mentioned results give evidence that the methodology used in determining the post-period for control firm in this study is appropriate.

The last conducted analysis in the scope of this research regards the firm's financial performance in the period that follows a marginal decrease in shareholder proposals. It is necessary to determine whether there is a significant change in a firm's performance following a decrease in shareholder proposals. Treatment firms were determined as those having experienced a decrease of at least three shareholder proposals compared to the previous year. The post-period for treatment firms were the three years that followed the decrease in proposals, excluding the year of the decrease. This test sheds light on the true effect of shareholder proposals, if an association were to be found it would cast serious that on the relation between shareholder proposals and firm's financial risks.

The 26th table shows the regression results of the above-mentioned procedure. The figure shows no significant value for the DID variable, for Altman's Z and the KMV model. Moreover, the O-score regression is insignificant for the 3rd

[42] This period has seen a slowing down and a negative GDP growth.

and 4th hypothesis. The significant of the DID coefficients for the first and second hypothesis are not corroborated by any of the two remaining regressions.

The above-mentioned regression analysis shows that the methodology employed to test the relation between the shareholder proposals and firms financial distress is correct and that there is no significant association between a decrease in shareholder proposals and the a subsequent financial distress.

The coefficients for the Z-score remain statistically insignificant. Moreover, the R-square of the regression decreases even further. The O-score regressions are negative and statistically significant at a 1% confidence interval. Nevertheless, none of the O-score results are corroborate the distance-to-default regressions. Its coefficients are statistically insignificant. Moreover, the values of the coefficients are positive.

Theses results indicate that no definite interpretation can be provided for a firm's financial performance in the years following a significant marginal decrease in shareholder proposals.

VII. Conclusion

This thesis has assessed the association between shareholder proposals and it's associated firm risk of financial distress. Regressing the variation of shareholder proposals has tested it by applying a difference-in-difference method of analysis. To measure a firm's financial risk, three different outcome variables have been used: Altman's Z, Ohlson O, and the Distance-to-default.

The regression results for the 3rd and 4th show a statistically significant and negative value for the coefficient of interest entailing a negative correlation between shareholder proposals and firm's risk of financial distress. Hence, a significant variation in shareholder proposals submitted by knowledgeable proponents is associated with a lower propensity of a firm facing a financial distress. In other words, a firm that has a higher variation in the number of proposals submitted by knowledgeable shareholders has a lower probability of facing a financial distress. The interest variable coefficient of the difference-in-

difference regressions is statistically significant and negative entailing a negative correlation between shareholder proposals and firm's risk of financial distress. Nevertheless, this relation is not unanimous, as no significant link has been found between 'governance and performance' proposals and firm's financial distress expect for 'governance and performance' proposals submitted by knowledgeable shareholders. This relation is highly dependent on the type of proposals submitted and the proponents that submits them. Moreover, the magnitude of the yearly variation in the number of submitted proposals heavily impacts the association between shareholder proposals and firms' financial distress.

This research provides evidence of the usefulness of shareholder proposals. As an association is proven between shareholder proposals and firms' propensity to be in distress, investor could factor in the variation in shareholder proposals into their investment decision. For future research, it will be interesting to investigate the intrinsic reason behind this relation within the scope of signaling theories and investor confidence.

It needs to be mentioned that this research has certain limitations. The main limitation is the small number of analyzed firms. Due to the availability of data only the 250 largest US firms were analyzed. This skews the observations to the biggest US firms and does not provide a representative picture, as smaller firms tend to have more financial problems. This research is based on the US market and should be careful when using it's results in other countries as the results are influenced by the legislative environment in which this research is conducted.

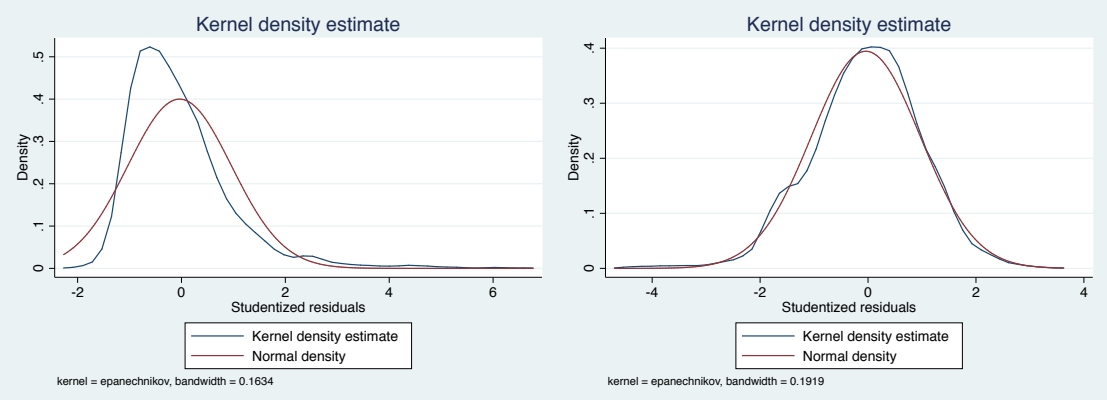
VIII. Appendix

a. Variable Definition:

TREATMENTFIRMS	= A binary constructed variable (1,0) indicating whether a certain experienced a significant variation in shareholder proposals. It's value is set to 1 for firms that have experienced at least once a significant variation in shareholder proposals. For firms that did not experience a significant marginal variation it's value is set to 0;
PREPOST	= A binary constructed variable (1,0). Its value is set to 1 for the period succeeding a significant marginal increase in shareholder proposal and for the periods preceding a significant marginal decrease in shareholder proposals. For remaining years in the sample window, its value is set to 0;
DID	= A binary constructed variable (1,0) obtained by multiplying Treatmentfirms and Prepost. It is the variable of interest as it measure the in between group and period effects of shareholder proposals;
Size	= The logarithmic transformation of firm's asset value at year end. This variable is used to control for firm size;
Book-to-market	= The ratio of a firm's book value at year end and it's market value at year end;
Inflation	= The percentage change in prices of the overall US economy in comparison to the previous year;
GDP	= The percentage change in gross domestic product of the US economy in comparison to the previous year;
SPCREDITSCORE	= A scale variable showing the Standard&Poor's credit score of a firm in a certain year. It's value ranges from 1 that shows the best possible grade "A" and 21 indicating the worst possible grade "SD".

b. Figures and tables

Figure 1: Kernel Density plot for Z-score



The left graph shows the Z-score distribution prior to a logarithmic transformation. The right table shows the Z-score regression distribution after the outcome variable has been logarithmically transformed. It can be seen that the blue line (Z-score regressions) follows the normal distribution (red line) much better on the right side graph. These graphs provide an indication on the usefulness of using the logarithm of the Z-score as the preferred outcome variable.

Table 6: Z-score regression Diagnostics

		Shapiro-Wilks test for Normality		Breusch-Pagan Test for heteroskedasticity		Collinearity Diagnostics
Variables	Observations	Z	Prob>Z	Chi2(1)	Prob>Chi(2)	VIF
Z-score regression	1833	12,680	0,000	62,39	0,000	5,45
Log Z-score	1833	5,747	0,000	40,31	0,000	5,54
Treatment firms	1833					1,54
Prepost	1833					1,04
DID	1833					1,34
Book-to-market	1833					1
Size	1833					1,32

The left panel illustrates the Shapiro-Wilks that tests the studentized residuals of the Z-score and log Z-score regressions. The Z-value is lower for the log Z-score regression, this implicates that the residuals of the logarithmic regression are more normally distributed compared to the Z-score regression (the Kernel density plot in the figure above corroborates this). The middle panel evaluates the variance in the regression residuals. A lower value of the Chi2(1) indicates smaller variances in the residuals (i.e. homogeneity of residuals). Due to the high value of the Chi-square test, the regression using Altman's Z-score will be using the vce(robust) command to control for the heterogeneity of regression residuals. The right panel tests the correlation between all regression variables. As a rule of thumb, a variance inflation factor (VIF) higher than 10 could indicate a potential correlation between variable, the variables within this regression do not present this problems.

Table 7: Specification Tests for the O-score regressions

	Hypothesis 1		Hypothesis 2		Hypothesis 3		Hypothesis 4	
	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
_hat	1,002	0,000	0,996	0,000	1,011	0,000	1,008	0,000
_hatsq	-0,035	0,950	0,007	0,901	-0,026	0,715	-0,016	0,771
_cons	0,002	0,972	-0,004	0,944	0,016	0,894	0,010	0,874
Pseudo R-square	9,50%		8,92%		9,2%		9,31%	
observations	1955		1955		1955		1955	

Specification tests are performed on all four-tested hypothesis when using the O-score as the outcome variable. The small and significant p-values of _hat indicate that the regressions follow a logistic pattern. Moreover, the large and insignificant p-values of _hatsq shows that there are no important variables that are omitted from the regression. This indicates that the O-score regressions are correctly specified.

Table 8: Goodness-of-fit test for the O-score regressions

	Hosmer-Lemeshow test		Akaike Information Criterion		Bayesian Information Criterion	
	chi2(8)	Prob>chi2	AIC	AIC*n	BIC	BIC'
Hypothesis 1	53,670	0,000	1,250	2442,777	-12339,000	-217,401
Hypothesis 2	35,020	0,000	1,258	2458,496	-12323,310	-201,683
Hypothesis 3	33,760	0,000	1,254	2451,242	-12330,564	-208,937
Hypothesis 4	41,260	0,000	1,252	2448,065	-12333,740	-212,113

The three performed tests (H&L, AIC and BIC) check whether the statistical model employed fits well the observation set. The O-score regression fits the observations poorly. This is shown by the low value of the Hosmer-Lemeshow test and the high values of the BIC and AIC. Nevertheless, the pseudo are square is fairly constant and slightly inferior to 10%. This discrepancy in the observations fitting is mainly due to the artificiality of the outcome variable and the minimal use of control variables.

Table 9: Collinearity Diagnostics for O-score regressions

	VIF
O-score	1.14
Treatment firms	1.39
Prepost	1.54
DID	1.80
Book-to-market	1.01
Size	1.16

Due to the low value of the Variance Inflation factor, the O-score regressions variables do not present a collinearity problem. Hence, the variables used in the regression are not correlated one to another.

Table 10: Specification tests for the KMV regressions

	Hypothesis 1		Hypothesis 2		Hypothesis 3		Hypothesis 4	
	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
_hat	1,287	0,000	1,850	0,000	1,724	0,000	1,740	0,000
_hatsq	-0,039	0,055	-0,110	0,037	-0,094	0,090	-0,097	0,084
_cons	-0,422	0,494	-1,281	0,120	-1,076	0,199	-1,094	0,192
Pseudo R-square	25,09%		25,66%		25,61%		25,14%	
observations	2518		2518		2581		2581	

Specification tests are performed on all four hypotheses using the Distance-to-default as the outcome variable. The small and significant value of the linear predicted value (_hat) indicates that the observations fit well into a logistic regression. The value of the linear predicted value squared (_hatsq) is inferior to a 10% confidence level. This might indicate that potential predicted variables are missing from the distance-to-default regressions. Nevertheless, the value of _hatsq was greatly increased by omitting the book-to-market variables and by adding additional market variables such as inflation, gross domestic product and company's credit scores.

Table 11: Goodness-of-fit test for the KMV regressions

	Hosmer-Lemeshow test		Akaike Information Criterion		Bayesian Information Criterion	
	chi2(8)	Prob>chi2	AIC	AIC*n	BIC	BIC'
Hypothesis 1	8,210	0,413	0,079	198,824	-19473,538	-5,223
Hypothesis 2	10,920	0,206	0,080	200,198	-19472,164	-3,849
Hypothesis 3	13,310	0,102	0,079	199,137	-19473,226	-4,910
Hypothesis 4	6,600	0,580	0,080	200,400	-19471,963	-3,647

The high p-values of the Hosmer-Lemeshow test and the low values of the AIC and BIC tests indicate that the regressions using the distance-to-default as outcome variable fit the data well. This fact is corroborate by the high value of the pseudo R-square.

Table 12: Collinearity diagnostics for KMV regressions

	VIF
Distance-to-default	1.01
Treatment firms	1.45
Prepost	1.02
DID	1.35
Size	1.24
Inflation	1.07
GDP	1.07
Creditscore	1.14

Due to the low value of the Variance Inflation factor, the KMV regressions variables do not present a collinearity problem. Hence, the variables used in the regression are not correlated one to another.

Table 13: Regression results for the 1st hypothesis for marginal increases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,023***	0,000	3,731***	0,000	15,046***	0,000
Treatmentfirms	0,096***	0,004	-0,108	0,360	-0,436	0,502
Prepost	-0,098**	0,021	2,428***	0,000	-omitted-	/
DID	0,005	0,919	-2,295***	0,000	0,725	0,514
Size	-0,193***	0,000	-0,418***	0,000	-0,707***	0,001
Book-to-market	0,001*	0,079	0,008*	0,087	/	/
Inflation	/	/	/	/	-0,583***	0,004
GDP	/	/	/	/	0,733***	0,001
Creditscore	/	/	/	/	-0,128*	0,069
Adj./Pseudo R-square	10,17%		9,04%		20,61%	
Observations	1671		1657		1868	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,989***	0,000	3,851***	0,000	15,046***	0,000
Treatmentfirms	0,1***	0,003	-0,129	0,276	-0,436	0,502
Prepost	-0,078*	0,074	2,412***	0,000	-omitted-	/
DID	0,002	0,963	-2,279***	0,000	0,725	0,514
Size	-0,192***	0,000	-0,428***	0,000	-0,707***	0,001
Book-to-market	0,001*	0,077	0,008*	0,087	/	/
Inflation	/	/	/	/	-0,583***	0,004
GDP	/	/	/	/	0,733***	0,001
Creditscore	/	/	/	/	-0,128	0,069
Adj./Pseudo R-square	9,90%		10,19%		20,61%	
Observations	1662		1616		1868	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 14: Regression results for the 1st hypothesis for marginal decreases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,556***	0,000	4,761***	0,000	11,551***	0,000
Treatmentfirms	0,105***	0,002	0,124	0,314	-0,312	0,638
Prepost	0,165***	0,002	2,61***	0,000	1,457*	0,064
DID	-0,015	0,763	-2,505***	0,000	-1,074	0,132
Size	-0,169***	0,000	-0,524***	0,000	-0,613***	0,001
Book-to-market	0,001*	0,058	0,007*	0,079	/	/
Inflation	/	/	/	/	-0,443**	0,038
GDP	/	/	/	/	0,41**	0,015
Creditscore	/	/	/	/	0,027	0,700
Adj./Pseudo R-square	8,78%		10,23%		19,83%	
Observations	1583		1565		2049	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,556***	0,000	4,761***	0,000	11,574***	0,000
Treatmentfirms	0,105***	0,002	0,124	0,314	-0,113	0,866
Prepost	0,165***	0,002	2,61***	0,000	1,788**	0,033
DID	-0,015	0,763	-2,505***	0,000	-1,126	0,119
Size	-0,169***	0,000	-0,524***	0,000	-0,64***	0,000
Book-to-market	0,001***	0,058	0,007**	0,079	/	/
Inflation	/	/	/	/	-0,49**	0,029
GDP	/	/	/	/	0,379**	0,027
Creditscore	/	/	/	/	0,267	0,696
Adj./Pseudo R-square	8,78%		10,23%		20,59%	
Observations	1583		1565		2031	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 15: Regression results for the 2nd hypothesis for marginal increases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,939***	0,000	3,53***	0,000	14,684***	0,000
Treatmentfirms	0,055	0,530	-0,196**	0,026	-0,684	0,294
Prepost	-0,032	0,254	2,619***	0,000	-omitted-	/
DID	-0,13	0,486	-2,298***	0,000	0,773	0,483
Size	-0,188***	0,000	-0,391***	0,000	-0,667***	0,002
Book-to-market	0,001*	0,068	0,009*	0,051	/	/
Inflation	/	/	/	/	-0,56***	0,005
GDP	/	/	/	/	0,702***	0,001
Creditscore	/	/	/	/	-0,132*	0,065
Adj./Pseudo R-square	9,77%		9,55%		19,55%	
Observations	1659		1682		1694	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,079***	0,000	3,686***	0,000	14,684***	0,000
Treatmentfirms	0,099	0,253	-0,189**	0,013	-0,684	0,294
Prepost	0,039	0,218	2,597***	0,000	-omitted-	/
DID	-0,162	0,384	-2,298***	0,000	0,773	0,483
Size	-0,209***	0,000	-0,405***	0,000	-0,667***	0,002
Book-to-market	0,001*	0,069	0,009*	0,051	/	/
Inflation	/	/	/	/	-0,56***	0,005
GDP	/	/	/	/	0,702***	0,001
Creditscore	/	/	/	/	-0,132*	0,065
Adj./Pseudo R-square	10,88%		9,67%		19,55%	
Observations	1629		1664		1694	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 16: Regression results for the 2nd hypothesis for marginal decreases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,663***	0,000	4,747***	0,000	15,03***	0,000
Treatmentfirms	0,15***	0,000	-0,145	0,297	1,636**	0,047
Prepost	0,124**	0,020	2,561***	0,000	-omitted-	/
DID	-0,003	0,966	-2,54***	0,000	-omitted-	/
Size	-0,175***	0,000	-0,516***	0,000	-0,013***	0,000
Book-to-market	0,001**	0,049	0,007*	0,084	/	/
Inflation	/	/	/	/	-0,343*	0,065
GDP	/	/	/	/	0,507***	0,001
Creditscore	/	/	/	/	0,036	0,592
Adj./Pseudo R-square	9,12%		11,00%		21,45%	
Observations	1588		1568		1780	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,663***	0,000	4,747***	0,000	15,03***	0,000
Treatmentfirms	0,15***	0,000	-0,145	0,297	1,636**	0,047
Prepost	0,124**	0,020	2,561***	0,000	-omitted-	/
DID	-0,003	0,966	-2,54***	0,000	-omitted-	/
Size	-0,175***	0,000	-0,516***	0,000	-0,013***	0,000
Book-to-market	0,001**	0,049	0,007*	0,084	/	/
Inflation	/	/	/	/	-0,343*	0,065
GDP	/	/	/	/	0,507***	0,001
Creditscore	/	/	/	/	0,036	0,592
Adj./Pseudo R-square	9,12%		11,00%		21,45%	
Observations	1588		1568		1780	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 17: Regression results for the 3rd hypothesis for marginal increases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,88***	0,000	3,369***	0,000	14,685***	0,000
Treatmentfirms	0,225***	0,000	-0,628***	0,001	-omitted-	/
Prepost	-0,083**	0,050	2,493***	0,000	-0,37	0,590
DID	-0,362***	0,000	-1,765***	0,000	-omitted-	/
Size	-0,179***	0,000	-0,371***	0,000	-0,647***	0,001
Book-to-market	0,001	0,162	0,006*	0,063	/	/
Inflation	/	/	/	/	-0,665**	0,011
GDP	/	/	/	/	0,795***	0,000
Creditscore	/	/	/	/	-0,127*	0,055
Adj./Pseudo R-square	10,10%		8,95%		20,36%	
Observations	1908		1885		2176	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,974***	0,000	3,889***	0,000	17,118***	0,000
Treatmentfirms	0,202	0,253	-0,554***	0,004	-omitted-	/
Prepost	-0,021	0,569	2,437***	0,000	-1,15	0,286
DID	-0,33***	0,001	-1,701***	0,000	-omitted-	/
Size	-0,194***	0,000	-0,428***	0,000	-0,801***	0,000
Book-to-market	0,001	0,122	0,006*	0,062	/	/
Inflation	/	/	/	/	-0,529**	0,015
GDP	/	/	/	/	0,698**	0,020
Creditscore	/	/	/	/	-0,151**	0,038
Adj./Pseudo R-square	10,09%		9,86%		22,63%	
Observations	1617		1601		1921	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 18: Regression results for the 3rd hypothesis for marginal decreases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,028***	0,000	3,624***	0,000	14,34***	0,000
Treatmentfirms	0,254***	0,000	-0,714***	0,001	-1,352**	0,027
Prepost	0,068**	0,014	2,436***	0,000	-0,016	0,979
DID	-0,089	0,379	-2,163***	0,000	-0,742	0,394
Size	-0,203***	0,000	-0,398***	0,000	-0,725***	0,000
Book-to-market	0,001	0,144	0,006*	0,059	/	/
Inflation	/	/	/	/	-0,473***	0,004
GDP	/	/	/	/	0,578***	0,000
Creditscore	/	/	/	/	-0,063	0,253
Adj./Pseudo R-square	11,26%		9,32%		24,48%	
Observations	1855		1840		2381	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,981***	0,000	4,308***	0,000	14,272***	0,000
Treatmentfirms	0,267***	0,000	-0,695***	0,002	-1,241**	0,044
Prepost	0,146***	0,000	2,392***	0,000	0,196	0,749
DID	-0,123	0,250	-2,124***	0,000	-0,835	0,344
Size	-0,206***	0,000	-0,465***	0,000	-0,733***	0,000
Book-to-market	0,001	0,114	0,006*	0,059	/	/
Inflation	/	/	/	/	-0,49***	0,003
GDP	/	/	/	/	0,607***	0,000
Creditscore	/	/	/	/	-0,064	0,240
Adj./Pseudo R-square	12,62%		10,37%		24,44%	
Observations	1561		1694		2252	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 19: Regression results for the 4th hypothesis for marginal increases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,86***	0,000	4,262***	0,000	13,266***	0,000
Treatmentfirms	0,201**	0,017	0,376	0,185	-omitted-	/
Prepost	0,188	0,537	2,394***	0,000	-0,511	0,482
DID	-0,204	0,305	-2,138***	0,002	-omitted-	/
Size	-0,181***	0,000	-0,472***	0,000	-0,444*	0,065
Book-to-market	0,001	0,129	0,007**	0,050	/	/
Inflation	/	/	/	/	-0,826***	0,000
GDP	/	/	/	/	0,677***	0,004
Creditscore	/	/	/	/	-0,156**	0,036
Adj./Pseudo R-square	8,90%		9,39%		18,51%	
Observations	1953		1928		2362	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,988***	0,000	4,78***	0,000	15,19***	0,000
Treatmentfirms	0,247***	0,002	0,459	0,109	-omitted-	/
Prepost	0,061*	0,055	2,354***	0,000	-0,596	0,443
DID	-0,234	0,190	-2,084***	0,003	-omitted-	/
Size	-0,198***	0,000	-0,528***	0,000	-0,604**	0,024
Book-to-market	0,001	0,208	0,007**	0,049	/	/
Inflation	/	/	/	/	-0,72**	0,030
GDP	/	/	/	/	0,606**	0,011
Creditscore	/	/	/	/	-0,185**	0,030
Adj./Pseudo R-square	9,79%		10,43%		18,39%	
Observations	1653		1635		2092	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 20: Regression results for the 4th hypothesis for marginal decreases in shareholder proposals

Panel A- All industries present

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,939***	0,000	4,11***	0,000	15,202***	0,000
Treatmentfirms	0,055	0,530	0,598**	0,026	-2,387***	0,000
Prepost	-0,032	0,254	2,45***	0,000	-0,608	0,283
DID	-0,13	0,486	-2,471***	0,000	-0,619	0,455
Size	-0,188***	0,000	-0,454***	0,000	-0,706***	0,000
Book-to-market	0,001*	0,068	0,007*	0,051	/	/
Inflation	/	/	/	/	-0,578***	0,001
GDP	/	/	/	/	0,678***	0,000
Creditscore	/	/	/	/	-0,104*	0,077
Adj./Pseudo R-square	9,77%		9,17%		30,66%	
Observations	1929		1909		2460	

Panel B- After removing industry with no treatment firms

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,079***	0,000	4,639***	0,000	17,029***	0,000
Treatmentfirms	0,099	0,253	0,673**	0,013	-2,517***	0,000
Prepost	0,039	0,218	2,405***	0,000	-0,921	0,157
DID	-0,162	0,384	-2,428***	0,000	-0,398	0,643
Size	-0,209***	0,000	-0,511***	0,000	-0,832***	0,000
Book-to-market	0,001**	0,069	0,007*	0,051	/	/
Inflation	/	/	/	/	-0,523***	0,008
GDP	/	/	/	/	0,646***	0,000
Creditscore	/	/	/	/	-0,118*	0,067
Adj./Pseudo R-square	10,88%		10,19%		33,73%	
Observations	1629		1616		2190	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 21: Regression results for manufacturing firms only

	Panel A- Hypothesis 1				*Panel B- Hypothesis 2*			
	Log Z-score		*O-score*		*Log Z-score*		*O-score*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	0,84***	0,003	10,004***	0,000	2,108***	0,000	7,072***	0,000
Treatmentfirms	0,021	0,574	1,414***	0,000	-0,021	0,580	0,261	0,172
Prepost	1,029***	0,000	2,86***	0,000	-0,17***	0,018	2,525***	0,000
DID	-0,051	0,355	-3,225***	0,000	-0,027	0,628	-2,255***	0,000
Size	-0,065***	0,000	-1,133***	0,000	-0,071***	0,000	-0,803***	0,000
Book-to-market	0,001	0,116	0,007**	0,027	0,001	0,118	0,007*	0,053
Adj./Pseudo R-square	5,77%		20,66%		4,05%		15,32%	
Observations	1271		1256		1382		1367	
	Panel C- Hypothesis 3				*Panel D- Hypothesis 4*			
	Log Z-score		*O-score*		*Log Z-score*		*O-score*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,345***	0,000	6,602***	0,000	2,191***	0,000	6,735***	0,000
Treatmentfirms	0,092***	0,005	-0,018	0,918	0,09***	0,007	0,005	0,979
Prepost	-0,354***	0,000	2,455***	0,000	-0,039	0,511	2,514***	0,000
DID	-0,049	0,343	-2,183***	0,000	-0,054	0,297	-1,973	0,000
Size	-0,08***	0,000	-0,748***	0,000	-0,095***	0,000	-0,764***	0,000
Book-to-market	0,001	0,147	0,007*	0,058	0,001	0,169	0,007*	0,056
Adj./Pseudo R-square	6,31%		14,66%		24,71%		15,11%	
Observations	1382		1367		1841		1367	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. Each panel provides the regression results for a different hypothesis. The sample range is from 2007 until 2016. Only manufacturing firms are used in this analysis; firms with the following SIC codes: 1-3999 & 5000-5999.

Table 22: Distance to default regressions using 2004 till 2016 as the data sample.

	Panel A- Hypothesis 1				*Panel B- Hypothesis 2*			
	Increases		***Decreases***		***Increases***		***decreases***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	13,742***	0,000	11,545***	0,000	13,745***	0,000	12,759***	0,000
Treatmentfirms	-0,588	0,297	-0,53	0,343	-0,822	0,146	1,076*	0,074
Prepost	0,131	0,845	2,214***	0,000	-0,075	0,912	1,967***	0,003
DID	0,734	0,500	-0,878	0,191	0,746	0,492	-omitted-	-omitted-
Size	-0,599***	0,001	-0,613***	0,000	-0,569***	0,002	-0,857***	0,000
Inflation	-0,533***	0,005	-0,548***	0,009	-0,528***	0,005	-0,369**	0,034
GDP	0,546***	0,001	0,336***	0,007	0,53***	0,002	0,487***	0,001
Creditscore	-0,142**	0,022	-0,019	0,711	-0,146***	0,020	-0,003	0,948
Adj./Pseudo R-square	14,38%		17,64%		14,59%		16,15%	
Observations	2785		2682		2824		2586	
	Panel C- Hypothesis 3				***Panel D- Hypothesis 4***			
	Increases		***Decreases***		***Increases***		***decreases***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	16,996***	0,000	13,576***	0,000	16,509***	0,000	17,029***	0,000
Treatmentfirms	-omitted-	-omitted-	-1,515***	0,002	-omitted-	-omitted-	-2,517***	0,000
Prepost	-0,536	0,454	-0,031	0,949	-0,508	0,482	-0,921	0,160
DID	omitted	-omitted	-0,53	0,486	-omitted-	-omitted-	-0,398	0,640
Size	-0,838***	0,000	-0,67***	0,000	-0,705***	0,004	-0,832***	0,000
Inflation	-0,48**	0,018	-0,422***	0,005	-0,692***	0,004	-0,523***	0,010
GDP	0,561***	0,002	0,407***	0,002	0,469**	0,015	0,646***	0,000
Creditscore	-0,176**	0,011	-0,083*	0,069	-0,218***	0,008	-0,119*	0,070
Adj./Pseudo R-square	19,90%		19,00%		17,24%		33,73%	
Observations	2530		2966		2758		2190	

A logistic regression is performed with Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2004 until 2016. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 23: Regression results when using two treatment firms per industry group to determine the post-period for each industry

	Panel A- Hypothesis 1					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,862***	0,000	10,004***	0,000	15,582***	0,000
Treatmentfirms	0,0178	0,649	1,414***	0,000	16,12	0,995
Prepost	0,038	0,294	2,86***	0,000	-omitted-	/
DID	-0,045	0,424	-3,225***	0,000	-16,417	0,995
Size	-0,069***	0,000	-1,133***	0,000	-0,897***	0,000
Book-to-market	0,000*	0,100	0,007**	0,027	/	/
Inflation	/	/	/	/	0,37**	0,029
GDP	/	/	/	/	0,546***	0,000
Creditscore	/	/	/	/	-0,063	0,274
Adj./Pseudo R-square	2,35%		20,66%		24,71%	
Observations	1271		1256		1841	
	Panel B- Hypothesis 2					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,841***	0,000	7,758***	0,000	14,445***	0,000
Treatmentfirms	-0,012	0,757	0,222	0,264	-1,98***	0,002
Prepost	0,012	0,720	2,565***	0,000	-omitted-	/
DID	-0,039	0,498	-2,303***	0,000	0,494	0,400
Size	-0,064***	0,000	-0,878***	0,000	-0,711***	0,000
Book-to-market	0,001	0,107	0,007*	0,051	/	/
Inflation	/	/	/	/	-0,299*	0,092
GDP	/	/	/	/	0,467*	0,002
Creditscore	/	/	/	/	-0,058	0,333
Adj./Pseudo R-square	2,29%		17,14%		24,71%	
Observations	1271		1256		1841	
	Panel C- Hypothesis 3					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,194***	0,000	7,288***	0,000	14,63***	0,000
Treatmentfirms	0,11***	0,001	-0,052	0,773	-0,806	0,232
Prepost	0,076	0,321	2,49***	0,000	-omitted-	/
DID	-0,065	0,218	-2,224***	0,000	-1,062*	0,067
Size	-0,083***	0,000	-0,823***	0,000	-0,728***	0,000
Book-to-market	0,006	0,155	0,007*	0,054	/	/
Inflation	/	/	/	/	-0,37**	0,030
GDP	/	/	/	/	0,556***	0,000
Creditscore	/	/	/	/	-0,076	0,195
Adj./Pseudo R-square	3,03%		16,45%		25,84%	
Observations	1271		1256		2063	
	Panel D- Hypothesis 4					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,834***	0,000	6,539***	0,000	14,042***	0,000
Treatmentfirms	0,133***	0,000	-0,223	0,336	-0,877	0,195
Prepost	0,009	0,823	3,331***	0,000	-omitted-	/

DID	-0,077	0,171	-2,846***	0,000	-0,847	0,148
Size	-0,064***	0,000	-0,734***	0,000	-0,703***	0,000
Book-to-market	0,001	0,209	0,007*	0,067	/	/
Inflation	/	/	/	/	-0,316*	0,078
GDP	/	/	/	/	0,487***	0,001
Creditscore	/	/	/	/	-0,079	0,180
Adj./Pseudo R-square	2,35%		16,87%		24,73%	
Observations	1158		1140		1582	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 24: Regression results when augmenting the marge for identifying a significant marginal difference

	Panel A- Hypothesis 2					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,67***	0,000	4,131***	0,000	13,821***	0,000
Treatmentfirms	0,234***	0,000	-1,173***	0,000	-1,408**	0,032
Prepost	0,061**	0,035	2,4***	0,000	0,351	0,581
DID	-0,106	0,362	-2,639***	0,000	-1,438	0,114
Size	-0,171***	0,000	-0,448***	0,000	-0,678***	0,000
Book-to-market	0,001**	0,029	0,006*	0,056	/	/
Inflation	/	/	/	/	-0,478***	0,003
GDP	/	/	/	/	0,602***	0,000
Creditscore	/	/	/	/	-0,065	0,221
Adj./Pseudo R-square	7,89%		11,57%		27,98%	
Observations	1833		1809		2389	
	Panel A- Hypothesis 3					
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,936***	0,000	4,412***	0,000	16,133***	0,000
Treatmentfirms	0,419***	0,000	-1,388***	0,000	-1,877**	0,011
Prepost	0,504***	0,000	2,074***	0,000	-0,729	0,415
DID	-0,423***	0,000	-0,91	0,158	-1,256*	0,094
Size	-0,131***	0,000	-0,475***	0,000	-0,783***	0,000
Book-to-market	0,001	0,354	0,007*	0,079	/	/
Inflation	/	/	/	/	-0,252	0,240
GDP	/	/	/	/	0,44**	0,016
Creditscore	/	/	/	/	-0,095	0,175
Adj./Pseudo R-square	26,02%		10,46%		39,62%	
Observations	1360		1343		1953	
	Panel A- Hypothesis 4					

	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,633***	0,000	4,851***	0,000	22,103***	0,000
Treatmentfirms	0,26*	0,060	-0,567	0,172	-2,9***	0,000
Prepost	0,094	0,264	2,084***	0,000	1,187	0,243
DID	0,059	0,820	-2,234***	0,005	-2,1	0,136
Size	-0,169***	0,000	-0,522***	0,000	-1,334***	0,000
Book-to-market	0,001	0,141	0,007*	0,077	/	/
Inflation	/	/	/	/	-0,22	0,281
GDP	/	/	/	/	0,691***	0,000
Creditscore	/	/	/	/	-0,133*	0,084
Adj./Pseudo R-square	7,67%		10,46%		43,65%	
Observations	1360		1343		1953	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable.

Table 25: Regression results when using the financial crisis period as the post-period in the difference-in-difference analysis

Panel A- Hypothesis 1						
	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,062***	0,000	4,918***	0,000	14,821***	0,000
Treatmentfirms	0,208***	0,000	0,31**	0,041	15,838	0,994
Prepost	-0,008	0,763	-0,233**	0,017	0,269	0,727
DID	-0,041	0,520	-0,124	0,626	-16,282	0,994
Size	-0,204***	0,000	-0,512***	0,000	-0,823***	0,000
Book-to-market	0,001**	0,045	0,005*	0,074	/	/
Inflation	/	/	/	/	-0,509***	0,004
GDP	/	/	/	/	0,642***	0,002
Creditscore	/	/	/	/	-0,049	0,360
Adj./Pseudo R-square	9,97%		4,29%		24,47%	
Observations	1980		1955		2518	
Panel B- Hypothesis 2						
	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,928***	0,000	4,599***	0,000	13,31***	0,000
Treatmentfirms	0,098**	0,014	0,01	0,941	-1,617***	0,004
Prepost	0,004	0,893	-0,233**	0,018	0,617	0,456
DID	-0,11	0,857	0,121	0,612	0,124	0,842
Size	-0,189***	0,000	-0,476***	0,000	-0,633***	0,000
Book-to-market	0,001*	0,076	0,005*	0,077	/	/
Inflation	/	/	/	/	-0,529***	0,004
GDP	/	/	/	/	0,709***	0,001
Creditscore	/	/	/	/	-0,048	0,374
Adj./Pseudo R-square	9,09%		4,14%		24,34%	
Observations	1980		1955		2518	
Panel C- Hypothesis 3						
	Log Z-score		*O-score*		*Distance-to-Default*	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value

Constant	3,094***	0,000	4,156***	0,000	13,553***	0,000
Treatmentfirms	0,251***	0,000	-0,367***	0,006	-0,676	0,268
Prepost	-0,021	0,451	-0,217**	0,028	1,324	0,119
DID	-0,056	0,346	0,063	0,785	-1,54**	0,016
Size	-0,209***	0,000	-0,423***	0,000	-0,682***	0,000
Book-to-market	0,001	0,139	0,005*	0,083	/	/
Inflation	/	/	/	/	-0,622***	0,001
GDP	/	/	/	/	0,82***	0,000
Creditscore	/	/	/	/	-0,063	0,235
Adj./Pseudo R-square	11,08%		4,54%		25,11%	
Observations	1980		1955		2518	

Panel D- Hypothesis 4

	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	3,094***	0,000	4,326***	0,000	13,553***	0,000
Treatmentfirms	0,251***	0,000	-0,331**	0,038	-0,676	0,268
Prepost	-0,021	0,451	-0,198**	0,042	1,324	0,119
DID	-0,056	0,346	0,312	0,284	-1,54**	0,016
Size	-0,209***	0,000	-0,446***	0,000	-0,682***	0,000
Book-to-market	0,001	0,139	0,005*	0,079	/	/
Inflation	/	/	/	/	-0,622***	0,001
GDP	/	/	/	/	0,82***	0,000
Creditscore	/	/	/	/	-0,063	0,235
Adj./Pseudo R-square	11,08%		4,26%		25,11%	
Observations	1980		1955		2518	

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

Table 26: Regression results for the period following a marginal decrease in shareholder proposals

Panel A- Hypothesis 1						
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,01***	0,000	7,675***	0,000	15,056***	0,000
Treatmentfirms	0,036	0,373	0,791***	0,000	-1,411***	0,004
Prepost	-0,209***	0,000	2,491***	0,000	-0,156	0,782
DID	-0,032	0,674	-2,595***	0,000	-omitted-	-omitted-
Size	-0,061***	0,000	-0,886***	0,000	-0,793***	0,000
Book-to-market	0	0,390	0,006*	0,084	/	/
Inflation	/	/	/	/	-0,522***	0,002
GDP	/	/	/	/	0,535***	0,001
Creditscore	/	/	/	/	-0,054	0,318
Adj./Pseudo R-square	7,44%		16,98%		24,12%	
Observations	972		1046		1783	
Panel B- Hypothesis 2						
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,01***	0,000	7,675***	0,000	15,056***	0,000
Treatmentfirms	0,036	0,373	0,791***	0,000	-1,411***	0,004
Prepost	-0,209***	0,000	2,491***	0,000	-0,156	0,782
DID	-0,032	0,674	-2,595***	0,000	-omitted-	-omitted-
Size	-0,061***	0,000	-0,886***	0,000	-0,793***	0,000
Book-to-market	0,001	0,390	0,006*	0,084	/	/
Inflation	/	/	/	/	-0,522***	0,002
GDP	/	/	/	/	0,535***	0,001
Creditscore	/	/	/	/	-0,054	0,318
Adj./Pseudo R-square	7,44%		16,98%		24,12%	
Observations	972		1046		1783	
Panel C- Hypothesis 3						
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	2,037***	0,000	6,036***	0,000	14,024***	0,000
Treatmentfirms	0,022	0,732	-0,938*	0,079	-2,596***	0,000
Prepost	-0,126***	0,000	2,516***	0,000	0,155	0,789
DID	0,059	0,552	-1,251	0,121	0,161	0,874
Size	-0,074***	0,000	-0,691***	0,000	-0,707***	0,000
Book-to-market	0,001	0,411	0,007*	0,067	/	/
Inflation	/	/	/	/	-0,427***	0,005
GDP	/	/	/	/	0,445***	0,000
Creditscore	/	/	/	/	-0,086*	0,066
Adj./Pseudo R-square	4,37%		13,85%		23,92%	
Observations	1184		1236		2986	
Panel D- Hypothesis 4						
	Log Z-score		***O-score***		***Distance-to-Default***	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1,822***	0,000	6,24***	0,000	13,447***	0,000
Treatmentfirms	-0,104*	0,068	-omitted-	-omitted-	-3,164***	0,000
Prepost	-0,288***	0,000	2,507***	0,000	-0,344	0,564
DID	0,022	0,864	-omitted-	-omitted-	0,306	0,760
Size	-0,045***	0,000	-0,714***	0,000	-0,582***	0,001
Book-to-market	0,001	0,281	0,008*	0,064	/	/
Inflation	/	/	/	/	-0,522***	0,003

GDP	/	/	/	0,673***	0,000
Creditscore	/	/	/	-0,105*	0,095
Adj./Pseudo R-square	8,41%	13,96%	31,30%		
Observations	1233	1294	2412		

An OLS regression is performed with Z-score as the dependent variable. A logistic regression is performed with O-score and Distance-to-default as outcome variable. *, **, *** indicate significance of the coefficients at 10%, 5% and 1% confidence level, respectively. The variable of interest of this research is DID. The sample range is from 2007 until 2016. A slash, / , indicates that a certain variable was not used in when conducting a regression with the above-mentioned outcome variable. The indication –omitted- entails that the variable is no useful in the prediction of the results and is therefore taken out.

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