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Master Thesis Accounting, Auditing and Control

Antitakeover defences, firm value and risk

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Abstract

The market for corporate control (often referred to as the takeover market) plays a disciplining role when it comes to managers executing opportunistic, effort-averse and risk-averse behaviour. In order to mitigate threats from the market for corporate control managers started to enact takeover defences, which provides them space to be able to increase their own wealth. In this thesis I find that an index based on fourteen takeover defences has a negative relation with the value of the firm. In addition, I do find that implementing takeover defences induces risk-averse behaviour by managers, but on the contrary investors do consider firms with relatively more takeover defences implemented more risky. The results suggest that in order to reduce threats from the market for corporate control the subset of 'key' takeover defences is not more effective than the index that incorporates all takeover defences, but investors do incorporate the strength of takeover defences in their assessment of firm-risk. My results are robust to the inclusion of both firm fixed-effects and year fixed-effects and several control variables. My results are also robust to the use of different proxies for both firm value and risk. I use a sample consisting of 2,894 firms and 11,538 firm-year observations of US firms listed at either NASDAQ or NYSE.

JEL classification: G34

Keywords: antitakeover defences, performance, agency conflicts, corporate governance

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1. Introduction

One area within management control deals with how to stimulate managers to behave in accordance with the firm's interests (Otley, 1999). Within the field of management control the agency theory asserts that managers maximize their own utility rather than aiming to maximize firm value. Shareholders are the owners of the firm and therefore it is in their interest to incentivize managers to act in the firm's interest. This contradiction may lead to a conflict between the two parties.

There are two key drives in this conflict, being goal incongruence and information asymmetry (Zhang, 2008). Managers are expected to be effort-averse and as providing additional effort does not benefit them it is not likely they will provide additional effort in order to benefit shareholders (Gormley and Matsa, 2016). In addition, due to the existence of information asymmetry between managers and shareholders, the owners of the firm are not able to perfectly observe managerial behaviour. When there is information asymmetry managers are able to execute opportunistic behaviour at the expense of shareholders. For example, past studies report several fraudulent examples of managers expropriating funds and using them to invest in privately held funds, maximizing their own utility in the process (Schleifer and Vishny, 1997). Despite the US law that aims to protect the investors from the occurrence of such events, it cannot eliminate information asymmetry between shareholders and managers (Schleifer and Vishny, 1997). Schleifer and Vishny (1997) argue that manager incompetency is the main problem that arises from the agency conflict. One example of the manifestation of manager incompetency is the financial crisis of 2007 when risk management had a huge impact on how firms were affected by the event (Erkens, Hung, Matos, 2012). However, it is hard if not impossible to measure manager competence because firm performance, an indicator of competency, might be driven by other factors besides competency (Jenter and Kanaan, 2006).

Management control issues that arise from managers not acting upon the interests of shareholders can be mitigated by threats from the market for corporate control (Tian and Twite, 2011). The market for corporate control is often referred to as the takeover market, since potential acquirers can gain control in a firm after a takeover. Obtaining control means obtaining the right to decide how corporate resources are managed, which in essence means the right to replace management (Humphery-Jenner and Powell, 2011). Threats from the market for corporate control are higher when the manager operates less efficient, since this will likely hit the share price, which results in the firm being an easier target in a takeover.

Using common sense one can argue that the only plausible reason for replacing management would follow from them operating inefficiently. So, acquirers can buy the firm relatively cheap, and replace the 'poor' functioning management in an attempt to increase the value of the firm. Therefore the market for corporate control plays a disciplining role, as it incentivizes managers to operate efficiently.

The most important threat of the market for corporate control arises from hostile takeovers (Kennedy et al., 1996). Hostile takeovers are acquisitions without approval of the firm's management, since in this case bidders directly approach shareholders, and are considered to be a means to replace inefficient management (Cheng et al., 2008). Therefore it is in the interest of managers to prevent such hostile takeovers, as these events will likely have consequences for their job. In the 1970s and 1980s hostile takeovers played an important role in the field of mergers and acquisitions (Gompers et al., 2003). As a reason of this hostile takeover wave, firm's management started to enact antitakeover defences in order to prevent current shareholders selling their shares without their approval (Jarrel et al., 1988). By implementing antitakeover defences managers provide the shareholders a way to protect their existing control from takeover bids. Most antitakeover defences lead to the firm becoming too expensive to take over, which negatively affects the attractiveness of being a target in an acquisition (Gompers et al., 2003).

In short, since antitakeover defences result in the firm becoming less attractive as a target in a takeover, the presence of antitakeover defences logically decreases the probability of being acquired and therefore managers face fewer threats of being replaced when operating inefficiently (Gormley and Matsa, 2016). Antitakeover defences are especially enacted when there is a threat of hostile takeovers. Since the intention of hostile takeovers is mostly to obtain control over the firm in order to replace inefficiently operating management, implementing antitakeover defences leads to a decrease of threats from the market for corporate control. Agency costs arising from the control problem between management and investors, which follow from managers following their own interests can be mitigated by threats from the market for corporate control. Vice versa agency costs increase when threats from the market for corporate control are blocked by the implementation of antitakeover defences. Therefore, do antitakeover defences provide more room for opportunistic and effort-averse behaviour of managers. Since both effort-averse and opportunistic behaviour most likely hit the value of the firm, this suggests a negative relation between antitakeover defences and firm value.

Assuming the market for corporate control is an efficient external mechanism in order to mitigate the incentives for managers to engage in both opportunistic and effort-averse behaviour this leads to the following research question:

"Is there a negative relation between the number of antitakeover defences implemented and firm value in the US?"

This relation would be in line with the entrenchment hypothesis that states that the implementation of antitakeover defences is at the expense of shareholders (Straska and Waller, 2014). I use Tobin's Q as a proxy for firm value, which I define as the market value of equity plus book value of preferred stock and debt divided by total assets based on a similar study of Gompers et al. (2003).

Besides testing the relation between antitakeover defences and firm value I aim to examine the relation between antitakeover defences and performance, since I predict that opportunistic and effort-averse behaviour negatively influences firm performance. Past literature provides both market-based and accounting-based metrics to proxy for firm performance. A widely used accounting-based proxy for profitability is return on assets (ROA) (e.g. Cohen and Zarowin, 2010). ROA is defined as net income divided by total assets and I consider this an appropriate proxy since it takes into account whether the firm is able to generate a stable return on its asset base. In addition I use the market-based metric earnings per share (EPS) as proxy for firm performance, based on past literature (e.g. Kang et al., 2010)

At last I aim to research whether the adoption of antitakeover defences affects the riskiness of the firm. I predict the adoption of antitakeover defences to negatively influence a firm's riskiness. As explanation for this Chen (2012) argue that the lack of threats from the market for corporate control lead to managers being more risk-averse than shareholders desire, following from both career concerns and managerial risk-aversion. Therefore managers have incentives to 'play it safe', since engaging in high-risk projects does benefit shareholders when they succeed, but does have consequences for them when they fail. I use the Beta as a proxy for risk based on Acharya et al. (2013).

The research question addresses an important conflict within the area of management control. From a management control perspective shareholders are considered to be principals and managers are the agents. Following the managerial power hypothesis, the conflict between managers and investors is even more pronounced in US firms, since US firms consist of one-tier boards, which means that both the executives and non-executives form the board

(Jungmann, 2006). The CEO, who has the highest management position in the firm, is often chairman of the one-tier board. When the CEO engages in opportunistic behaviour, meaning that he chases private interests at the expense of the firm, it is unlikely that the board of directors will punish him, as it is likely that they want to have business ties with the CEO. This indicates that the market for corporate control plays a more important role for firms with a one-tier board. However, after corporate governance scandals in the early 2000s (e.g. Enron, WorldCom and HealthSouth) the Congress accepted the Sarbanes-Oxley act (SOX) in 2002. The act required firms to have a majority of independent directors in the board. Independent directors do not have ties or personal connections with either the CEO or the firm, and are therefore expected to monitor management more efficiently, leading to a decrease in agency conflicts (Coles et al., 2008). Earlier work on this topic focuses mainly on the period between 1990 and 2002, therefore the effects of SOX are not incorporated in their results. Since the dataset in this study starts in 2011 the results do incorporate the effects of SOX on agency conflicts between shareholders and managers.

My thesis contributes to several gaps in literature. First, I consider the period after the implementation of the Sarbanes-Oxley act. Since previous studies that examined to relation of takeover defences with firm value and firm performance relied on the G-index, and data to construct this index is only available for some years up until 2002, these studies are not able to incorporate the effect of SOX in their results. In addition, I contribute to existing literature by testing the relation between takeover defences and the perceived level of risk of the firm. Past studies acknowledged that not every takeover defence is equally effective in its use (e.g. Bebchuk at al., 2009; Brown and Caylor, 2005; Cremers and Nair, 2005). These studies constructed alternative indices using only several 'key' takeover defences. However, the disadvantage of this method is that one ignores all other indices not included in the index. I conduct an additional analysis in which I use an antitakeover index using different weightings for each defence. To be more specific, I give the six takeover defences that are included in the E-index a higher weighting than the other takeover defences. In addition, most studies that address the issue of the relation between antitakeover defences and shareholder wealth make use of event studies (Coates, 2000; Straska and Waller, 2014). They test whether the announcement of the adoption of a new defence does affect the return on the firm's stock. However, as both Coates (2000) and Gompers et al. (2003) argue the defence might affect both the governance structure and send a signal that there is a potential takeover bid coming. Since the signal reveals private information from the manager, this piece of information might

influence the stock price which leads to an endogeneity issue. I attempt to overcome this issue by testing the relation using yearly data, since after a longer period of time the effect of the signal on the stock price is neglectable. Therefore I suspect this endogeneity issue to be mitigated since this research addresses the effect of antitakeover defences on firm performance and firm value over a longer period of time.

Most papers in this field take advantage of the measure created by Gompers et al. (2003) to proxy for the level of antitakeover defences, which contains 24 corporate governance rules to proxy for the amount of antitakeover defences. Based on these governance rules they created the G-index, which is a score based on the amount of antitakeover defences that are enacted. Their methodology is straightforward as for each defence that is enacted the score increases by one point. However, as data on this construct is only available up to 2002 I use the method of Gompers et al. (2003) to construct a similar measure based on fourteen possible antitakeover defences a firm can enact that are provided by the database ISS. For twelve of these takeover defences I add a point to the score if the firm had implemented it in a given year. For two of the takeover defences I deduct a point from the score since I consider the implementation of these two to be in favour of shareholders. This means that I create a score (the A-index) that can take the value zero up to and including twelve, depending on the amount of antitakeover defences that are enacted. This method enables me to study this relation for the period 2011-2017, a more recent time period than similar studies. I choose 2011 as a starting date of this sample to avoid crisis years. The financial crisis affected both financial performance and showed a huge decline in M&A activity, which most likely affects the amount of antitakeover defences enacted (Grave et al., 2012). Therefore this thesis adds to the broad amount of literature on this topic. An extensive amount of literature finds empirical evidence for agency conflicts being present at firms (e.g. Ang et al., 2000; Jiraporn and Ning, 2006; Maxwell and Rao, 2003). Thereby does past literature find agency conflicts to be an important determinant of firm performance and firm value, emphasizing the importance of this matter (Billet et al., 2007; Ho et al., 2006; Rajan and Zingales, 1995). In addition, I use the E-index, a score based on six antitakeover defences, constructed by Bebchuk et al. (2008). I perform additional tests with the E-index as dependent variable to test whether the relations are driven by only some 'key' takeover defences.

I retrieve corporate governance data from Institutional Shareholder Services (ISS) which can be accessed via WRDS. The database provides data of 4,016 firms located in the US. A merged dataset from Compustat/CRSP provides financial and accounting data for 2,532 of the

aforementioned 4,016 firms. Merging these two datasets therefore leads to a raw panel data set of 11,531 observations distributed over these 2,894 firms.

I use a fixed-effects panel data regression model to test the hypotheses. I do find that the A-index has a negative relation with Tobin's Q, suggesting there is a negative relation between takeover defences and firm value. However, I do not find a significant relation between the E-index and firm value. I do find that antitakeover defences negatively relates to firm performance, but that this relation is not robust to the inclusion of firm fixed-effects. At last I find a positive relation between both the A-index and E-index and Beta.

My findings have several contributions to existing literature. First, my results suggest that the negative relation between the implementation of additional takeover defences and firm value holds for a sample starting nine years after the Sarbanes-Oxley act was accepted. Besides, contrary to previous work, my findings suggest that managers that destroy firm value do not necessarily implement 'key' takeover provisions, since I do not find a significant relation between the E-index and firm value. Second, I do find that the negative relation between antitakeover defences and firm performance does not hold after the implementation of SOX. More specifically, my findings suggest that the relation between the implementation of takeover defences and firm performance is driven by unobservable firm-specific factors. Previous studies did not study the relation between takeover defences or firm value after SOX. Third, I find that the adoption of additional takeover defences positively relates to Beta, suggesting that firms with relatively more takeover defences are viewed more risky by the equity market. The existing body of literature found a negative relation of takeover defences with cost of debt and a positive relation with implied cost of equity, but did not research the relation between takeover defences and perceived riskiness by equity holders. My findings add to this body of literature since I find that takeover defences positively relate to the perceived riskiness by equity holders. Lastly, my findings contribute to the existing body of literature since I do find that investors do distinguish between takeover defences in assessing the risk level of firms, since I find the coefficient for the E-index to be stronger than the coefficient for the A-index.

The remainder of this thesis is structured as follows. In section two I further explain the underlying theories and related empirical studies and I develop the hypotheses. In section three I describe the research design and the process of data gathering, cleansing, creation of variables and I provide a description of the data. Section four provides the results following from testing the hypotheses. At last section five concludes.

2. Literature review and hypotheses development

First, this section describes and explains the main theories that are key for the predictions made in this research. Then I elaborate on the agency theory and its relation with internal corporate governance. In the second subsection I explain how the Sarbanes Oxley Act (SOX) led to a reform in the corporate governance of US firms. In the third section I provide explanations why investors do provide firms with funds as this leads to them being involved in an agency conflict. In the third subsection I explain the role of the market for control in dealing with the agency conflict between management and investors. The fourth, fifth and sixth subsection develop the hypotheses and explain the underlying motivation. Finally, I provide a brief summary of all literature covered and the empirical predictions.

2.1 Agency theory and corporate governance

The agency theory is a fundamental theory within corporate governance and states that the interests between principals and agents are not aligned (Jensen and Meckling, 1976). The agency theory asserts that there is a separation between management (agents) and owners (principals) within a firm (Filatotchev and Wright, 2011). Agency conflicts between two parties are driven by both information asymmetry and goal incongruence (Bhattacherjee, 1998). Goal incongruence follows from one of the key assumptions of the agency theory, being that all parties aim to maximize their own utility. Managers aim to minimize their effort level in order to be able to stay at the job, thereby do managers attempt to maximize the level of private gains. The most important manifestation of opportunistic behaviour is managers focussing on the short-term, while investors are interested in the long-term maximization of firm value (Fong, 2010). However, it would be in the shareholder's interests if managers would increase their effort in order to increase firm value. As managers follow their own interests and have asymmetric information, shareholders are not able to perfectly observe the actions of managers, leading to agency conflicts.

One manifestation of the agency conflict between managers and shareholders is the distribution of returns. Since the shareholders provide the manager with funds, it is important that both have an agreement on how returns of those funds are distributed between them (Schleifer and Vishny, 1997). However, these agreements mostly suffer from incompleteness as they cannot contain every outcome in each state of the world. Therefore one of the parties has to decide what happens with the funds if the projects ends up differently than expected. This sort of decision making is often referred to as residual control rights (Hart, 2017). If the

investors would be capable of decision making under uncertainty they would not have asked the manager to invest their funds in the first place so therefore it makes sense that the manager ends up with the residual control rights (Schleifer and Vishny, 1997). As a reason of the managers ending up with residual control rights a conflict might arise, which is more pronounced when maximizing firm value is not the manager's first priority. Thus, since managers end up with residual control rights, they are left with room to execute opportunistic behaviour.

The ultimate solution to the agency conflict between management and investors would be a perfectly designed incentive contract (Schleifer and Vishny, 1997). The optimal contracting view of management control states that managers should be incentivized to act on behalf of the investors by writing such a contract. However, there is one problem with writing such contracts, as these incentive contracts are negotiated with directors (Bebchuk and Fried, 2003). In order for this contracts to be credible, the directors that construct these contracts need to be independent.

2.2 Sarbanes Oxley Act

As stated before, US firms consist of one-tier board, which means that both inside directors whose primarily tasks are within the firm (e.g. CEO, CFO) and outside directors whose primarily tasks are outside the firm are part of the board. Outside directors can either be independent or dependent. Independent directors are those defined as "having no ties or personal connections with either the CEO or the firm" (Coles et al., 2008). Dependent directors on the other hand do have connections to the firm.

Following several corporate governance scandals of Enron, WorldCom and HealthSouth of early 2000s the Congress accepted the Sarbanes-Oxley Act (SOX) in 2002. The act required firms to have a majority of independent directors in the board. Independent boards are expected to monitor management more efficiently and act on behalf of shareholders (Tuggle et al., 2011). In addition, independent boards are more likely to fire poor performing CEO's, which decreases CEO incentives to engage in projects associated with a lot of uncertainty (Manso, 2011).

There is a consensus in literature on corporate governance on the assertion that independent boards are more efficient than dependent boards (e.g. Coles et al., 2008; Lefort and Urzúa, 2008). These studies argue that independent directors do monitor management more efficiently, which leads to better firm performance. Rationale behind this relation is that in

anticipation of being monitored more efficiently, managers exert more effort and engage less in opportunistic behaviour. This leads to the conclusion that the SOX has led to more aligned incentives of managers and shareholders.

Therefore the so-called CEO/chairman duality problem, which is more pronounced when the board consists of relatively many dependent members, is mitigated by the SOX. However, despite the implementation of SOX, agency problems between shareholders and managers still play a role in current corporate governance structures (Cianci et al., 2011). Reason for this is that the implementation of SOX cannot fully eliminate information asymmetry and goal incongruence, the two main drivers of agency conflicts.

2.3 Investing without corporate governance?

The existence of agency conflicts within a firm raises the question why investors do give their funds to managers in the first place. However, external financing does occur extensively, which suggests that some logical explanation must lie behind this. The main explanation for this is the incentive to receive control rights. Shareholders do have the right to vote on several matters such as mergers and acquisitions, and voting for board members (Mallin and Melis, 2012).

The investment shareholders make is considered to be sunk for the most part, therefore managers do not have incentives to act in the shareholder's best interests. To partly solve this issue, in OECD countries there is a duty of loyalty from managers to shareholders (Hawley et al., 2011). This means that managers have to act upon the best interests of shareholders. Especially in the US this duty is considered to be of importance as the courts would interfere, and shareholders have the right to sue managers that violate the loyalty of duty. The existence of this duty of loyalty increases the incentives to invest.

Literature on corporate governance provides two additional arguments why external financing does happen extensively, being reputation and investor optimism (Schleifer and Vishny, 1997). The reputation argument states that managers do have incentives to keep their end of the agreement. If a manager once reneges, it harms his reputation and therefore future investors will be less likely to provide him with their funds. However, the reputation argument does not tell the whole story since if investors do have reasons to believe that at some point in the future the manager reneges, they will not provide him with their funds. The investor optimism argument asserts that investors expect short-term capital gains since they expect the share price to increase in the short-term (Baker and Wurgler, 2006). A vast amount

of studies finds empirical evidence for investor optimism in the stock market (e.g. Baker and Wurgler, 2006; Baker and Wurgler, 2007; Brown et al., 2012; Wong and Tho, 2014; Lui, 2015). These studies find that issued shares in initial public offerings (IPO) are mostly overvalued, and since investors do not have information on previous performance of the stock investor optimism seems the only plausible explanation. Nayak (2010) finds similar evidence for bonds as he finds a relation between bond yield spreads and investor sentiment.

2.4 The market for corporate control

Corporate governance can be defined as "as a set of processes and structures for controlling and directing an organization" (Abdullah and Valentine, 2009). It consist of all rules that deal with the relation among all stakeholders of the firm. Following this reasoning, better governance benefits the investors of the firm (Cremers et al., 2005). In 'good' corporate governance both internal and external mechanisms matter. As internal corporate governance mechanisms one can think of board monitoring, shareholder monitoring and internal audits. The market for corporate control usually plays a role as an external governance mechanism when a firm has poor internal governance mechanisms (Kennedy et al., 1996; Tian and Twite, 2011). When the acquirers takes control, it can replace management (Gompers et al., 2003). As mentioned before, one type of takeovers is a hostile takeover, takeovers that are not approved by management. Usually hostile takeovers occur by a tender offer or a proxy fight (Bebchuk and Hart, 2010). In a tender offer the bidder attempt to buy outstanding shares at a premium, he offers the current shareholders a premium above the current share price and offers them a deadline. In a proxy fight the bidder attempts to replace management by making shareholders use their proxy votes, in the hope of replacing board members with one of their own. The eventual goal of hostile takeovers is to improve firm performance by replacing poor functioning management (Gompers et al., 2003). Therefore potential threats of hostile takeovers might put pressure on managers to run the firm more efficiently, leading to more aligned interest between shareholders and managers. As inefficient internal governance usually results in poor performance, the firm becomes an attractive target for a takeover in the market for corporate control. In this case acquirers might approach current shareholders and make a bid to buy enough of their shares in order to take control of the firm.

2.5 Antitakeover defences

The takeover wave in the 1980s was characterized by hostile takeovers (Klock et al., 2005). As a consequence of that managers decided to enact several antitakeover defences to prevent their firms from being a target in a hostile takeover. In addition a relaxation of the law

surrounding antitakeover defences led to firms implementing them more extensively. More specifically, in 1985 Delaware Supreme Court provides corporate management with the ability to adopt a Poison Pill, without shareholder approval. Poison Pills are mostly activated after a triggered event, e.g. an investor that buys a certain percentage of the stock. A Poison Pill is a means with the aim to make the firm's stock less attractive to be acquired by potential investors. One example of the implementation involves current shareholder (apart from the potential acquirer) to buy additional shares at a price below market value whenever there is a threat of an acquirer potentially obtaining control. Assuming investors are rational they would buy an additional share if they can buy one below market price. Aim of the implementation of a Poison Pill is the dilution of the ownership of the potential acquirer, which makes it harder and much more expensive for him to obtain control. As acquirers become aware of the fact that the target might implement a Poison Pill plan, they might be reluctant to buy their shares in the first place (Subramanian, 2003). The effectiveness of Poison Pills is striking as there has never been a reported case where a hostile bid has succeeded in the presence of an unredeemed Poison Pill. One recent example of the adoption of a Poison Pill is the one enacted by the franchise Papa John's International Inc.'s (Hsu, 2018). John Schnatter was the largest shareholder of the firm with 30 percent of the firm's stock. To prevent John Schnatter from obtaining control the management enacted a Poison Pill defence by adopting a Limited Duration Shareholders Rights plan. Apart from John Schnatter all existing shareholders were granted a dividend of one right per common share. The plan leads to Schnatter not being able to obtain more than 31% of the firm's stock, thereby not being able to gain control.

Another important mechanism to prevent hostile takeovers are antitakeover amendments. Public firms can enact several types of antitakeover amendments. The most common ones are 1) requiring the approval of the supermajority of shareholders before a takeover can be completed (supermajority defences), 2) requiring the acquirer to meet a specified price (fair price defences), 3) classify the structure of the board (Classified Board defences), 4) providing directors with power to issue new stock (Blank Check Preferred defences), restriction of shareholders to call special meetings, and the elimination of Cumulative Voting rights (Straska and Waller, 2014). However, some antitakeover amendments can serve multiple goals, the main purpose is to increase the possibility to complete a hostile takeover. Empirical studies find evidence for the entrenchment hypothesis, which suggests that managers are the ones that benefit from the adoption of antitakeover amendments. In early work, Borokhovich et al. (1997) find evidence for the entrenchment hypothesis, as they find

that after the adoption of antitakeover amendments the average CEO compensation increases. In their event study they find that the increasing CEO wealth is at the expense of shareholders since they find stock prices to decline after the antitakeover amendments was announced

As mentioned earlier, Gompers et al. (2003) construct the G-index which is a score that consists of 24 possible antitakeover defences a particular firm can enact. The higher the number of enacted antitakeover defences, the higher the G-index. They find the G-index to be significantly negatively related to both Tobin's Q and profitability, suggesting a negative relation between antitakeover defences and both the value of the firm and firm performance. They also find that a portfolio that buys stocks of the firms in the lowest decile of the G-index score and sells the stocks in the highest decile of the G-index would have earned an abnormal return of 8.5% per year. This suggest that boards that adopting more antitakeover defences is at the expense of shareholders. In a similar study Cremers and Nair (2005) construct another measure, ATI, which consists of only three key antitakeover defences. They find this construct to have a negative relation with firm value, stock returns and profitability.

Bebchuk and Cohen (2005) document that staggered boards, which is one of the antitakeover amendments, do negatively influence firm value. Rationale behind the adoption of staggered boards, often referred to as Classified Boards, is that it would lead to huge delay in the process of obtaining control by the acquirer. Reason for the delay is the fact that only several member of the board are up for election each year, which makes it harder to replace the board in order to obtain control. More recently, Chen (2012) finds that on average staggered boards are associated with lower firm performance. Brown and Caylor (2005) construct the Gov-Score, a measure based on 51 antitakeover defences, and do find a negative relation between Gov-Score and firm value. However, they find this relation to be driven by only seven key defences (the Parsimonious index).

Bebchuk et al. (2008) construct an entrenchment index to proxy for the level of antitakeover defences, which consists of six defences, the research design section provides further information regarding the construction of this index. They find this variable to have a negative correlation with firm value and abnormal stock returns. In an additional test the authors find that the remaining 18 defences that were captured in the G-index but not in the entrenchment index did not have a significantly negative correlation with both firm value and performance.

Despite the weak market for corporate control in the banking industry Grove et al. (2011) find the pre-financial crisis banking performance to have a negative association with the number of antitakeover defences adopted. This suggests that the discipline of banking directors is even further diminished by the adoption of antitakeover defences. Grove et al. (2011) argue that two key antitakeover defence categories, being on the one hand Classified Boards and Poison Pills and on the other hand the supermajority defences. They argue that following the agency theoretical perspective these are the main defences that influence managerial entrenchment. Sokolyk (2010) emphasizes in his study that the combination of Classified Boards and Poison Pills is the strongest mechanism to prevent hostile takeovers, as he finds, using a multivariate hazard model, the takeover probability to be the lowest after a firm implements these two particular defences. This suggests the combination of Classified Boards and Poison Pills has the strongest signalling effect to the market of corporate control.

The aforementioned theoretical studies find both theoretical and empirical evidence for the entrenchment hypothesis, which asserts that the enactment of antitakeover defences enables managers to make operating decisions that are beneficial to them at the expense of shareholders (Straska and Waller, 2014). The results above suggest that the negative relation between antitakeover defences and both firm value and firm performance is most likely driven by some key defences, suggesting the incremental effect of enacting additional defences besides the key defences is neglectable. In short, there is a consensus in past literature that the adoption of antitakeover defences negatively influences both the value of the firm and firm performance. This leads to the first and second hypotheses (both in alternative form):

Hypothesis 1: There is a negative relation between the number of antitakeover defences a firm has implemented and firm value

Hypothesis 2: There is a negative relation between the number of antitakeover defences a firm has implemented and firm performance

Following comparable studies that research the relation between antitakeover defences and firm value I use Tobin's Q as a proxy for firm value (e.g. Cremers and Nair, 2005; Gompers et al, 2003; Straska and Waller, 2010). I define Tobin's Q as the market value of assets divided by the book value of assets. The market value of assets is the book value of assets plus the market value of equity minus the book value of common equity minus deferred taxes.

Firm performance can be both proxied by accounting based performance measures and market based performance measures. As accounting based performance measure I use return on assets (ROA), I define ROA as net income divided by total assets (Gompers et al., 2003). I use earnings per share (EPS) as market based performance measure, which is defined as net income divided by total shares outstanding (Yusof and Alhaji, 2012).

2.7 Antitakeover defences and risk

Besides the agency conflicts that follow from opportunistic behavior and managers being 'lazy', there is a third agency conflict than can arise between managers and shareholders. This particular conflict relates to managerial risk-taking. Chen (2011) argues that the implementation of antitakeover defences leads to less managerial risk-taking than what diversifying shareholders would desire. There are several possible explanation for this assertion. On the one hand, since antitakeover defences reduce threats from the market for corporate control, managers have more freedom to follow their own preferences. Managers have an incentive to invest in low-risk projects instead of high-risk projects, since the probability of failure of high-risk project is much higher. When the project fails, this might affect the manager's future job opportunities. When the projects succeeds, the wealth of the manager does not directly increase. However, it is in the shareholder's interest that managers engage in high-risk projects, since success of the project would increase shareholder wealth through an increase in the share price. Therefore, assuming that the probability of failure of low-risk projects is much smaller, managers will more likely engage in low-risk projects. This reasoning is in line with the agency theory that asserts that managers follow their own interest. Gormley and Matsa (2016) find that managers having a large amount of equity holdings are more likely to act risk-averse than managers with lower amounts of equity holdings. Intuition behind this finding is that in the case of owning some of the firm's stock the wealth of the manager does not only depend on his salary, but also on the performance of the firm. This suggests that managerial risk-aversion does play a role when managers when managers have room to act in self-interest. In addition do they find that younger CEO's are more likely to act risk-aversely, suggesting career concerns also play a role in corporate policy. Due to the reduced threat of hostile takeovers from the market for corporate control, managers have more room to act risk-aversely. Klock et al. (2005) and Cremers et al. (2007) find the number of antitakeover defences to be negatively related to the cost of debt. As debtholders determine their required return based on the distress risk at the moment of providing the funds, one can argue that they consider firms with relatively more antitakeover

defences less risky. This might be a result of managerial risk-aversion. I examine whether antitakeover defences and the riskiness of the firm are negatively related and state the following hypothesis (in alternative form):

Hypothesis 3: There is a negative relation between the number of antitakeover defences a firm has implemented and the riskiness of the firm

To examine the riskiness of the firm I use a firm's aggregate risk exposure. One should note that several risk-based measures exist, to proxy for the level of risk I use a market-based risk measure. Based on Acharya et al. (2013) I use the Beta as a measure of aggregate risk. Since managers mostly own some shares of the firm's stock, they benefit from a low Beta since this leads to a stable value of their holdings. The Beta of a stock measures the volatility relative to the market (Levy, 2002). The research design section elaborates on the computation of Beta.

2.8 Summary

The agency theory is a central theory within management control and it deals with the situation of delegated tasks. Public firms are owned by shareholders (the principal) who hire a manager (the agent) to run the firm. Shareholders hire managers to run the firm in order to maximize firm value. Wealth being distributed to shareholders follows from dividends when the firm has a profit, or when the stock price increases. The agency theory, however, assumes that managers follow their own interests. This means that they want to maximize their pay and they want job security. This might lead to three potential conflicts. First, managers are expected to be effort-averse since providing effort that leads to good firm performance and high firm value does not benefit them directly. Second, they execute opportunistic behaviour in order to maximize their own gains. The most important manifestation of executing opportunistic behaviour is that managers focus on the short-term, since their pay in mostly determined by short-term performance. Therefore they do not have incentives to maximize long-term firm value. Third, since managers do not want to lose their job they are expected to be risk-averse. Apart from goal incongruence, the conflict is driven by information asymmetry, as managers engaging in opportunistic behaviour, acting effort-aversely and risk-aversely is more likely when these types of behaviour are not observable by shareholders.

Corporate governance deals with agency conflicts within firms (Schleifer and Vishny, 1997). Besides internal corporate governance mechanisms (e.g. board of directors) also external corporate governance mechanisms exist. One important manifestation of an external corporate governance mechanism is the market for corporate control. The market for corporate control,

often referred to as the takeover market, has a disciplining function since it puts pressure on managers to perform. Rationale behind it is that if managers do not perform well, this would most likely hit the share price, which leads to the firm becoming an attractive target. The biggest threat from the market for corporate control follows from hostile takeovers, since the aim of hostile takeovers is mostly to replace inefficiently operating management. To prevent hostile takeovers, managers started to enact antitakeover defences. Antitakeover defences are means in order to prevent a takeover. When the manager succeeds in mitigating threats from takeovers, this provides them with space to execute effort-averse, risk-averse and opportunistic behaviour. Therefore I predict the number of takeover defences a firm has implemented to have a negative association with firm value, firm performance and firm risk.

3. Research design

This section describes both the methodology and data that are used in order to test the empirical predictions. First, I provide the regression equation for each hypothesis. Second, I describe the creation of all variables. Third, I describe the process of data gathering, cleansing and provide an overall description of the data. Fourth, I provide a brief summary of the research design.

3.1 Regressions

3.1.1 Panel data

Using panel data is a common approach in empirical research to reduce endogeneity issues (Semykina and Wooldridge, 2010). Panel data models also offer advantages over purely cross-sectional models by reducing individual heterogeneity and the multicollinearity problem (Green, 2008). I use cluster-robust standard errors to control for autocorrelation and heterogeneity (Wooldridge, 2010). When estimating panel-data regression models one can use a fixed-effects or a random-effects model. The regression equation of a fixed-effects panel data model is as follows

$$Y_{i,t} = \beta X_{i,t} + \alpha_i + \sum controls_{i,t} + u_{i,t}$$

The regression equation of a random-effects panel data model

$$Y_{i,t} = \beta X_{i,t} + \alpha + u_{i,t} + \sum controls_t + \varepsilon_{i,t}$$

In these equations $X_{i,t}$ is the dependent variable and β the coefficient of interest. In the fixed-effects model α_i is firm-specific interception, whereas in the random-effects model α assumed to be randomly distributed. The term $u_{i,t}$ is the between entity error-term in both models, besides this between entity error-term the random effects model also contains a within-entity error-term $\varepsilon_{i,t}$. The term $\sum controls_t$ captures all control variables I use in this research, which I further outline in the next subsection. This study uses cluster-robust standard errors in the regression equations and therefore I use a robust version of the Hausman-Wu test to determine whether the fixed-effects or the random-effects model is the more appropriate model to use (Wooldridge, 2010). This test does test whether unobservable factors are either firm-specific or randomly distributed. The null-hypothesis of this test states that the unobservable factors are randomly distributed. If the latter would be true, a random-

effects model is the preferred model. Rejecting the null-hypothesis suggests the fixed-effects model is the favoured model to use (Green, 2008).

3.1.2 Regression equations

The robust version of the Hausman-Wu test suggest that the fixed-effects model is the preferred model. In this subsection I outline the regression equations for the specific hypotheses. To test the hypotheses I use a panel data regression model with the antitakeover defence score as independent variable.

Hypothesis 1

To test the second hypothesis I use a fixed-effects panel data model with antitakeover defences as independent variable and firm value as dependent variable. I use Tobin's Q as proxy for firm value, resulting in the following regression equation

$$Tobin's\ Q_{it} = \alpha_i + \alpha_t + \alpha_1 Aindex_{it} + \alpha_2 Lev_{it} + \alpha_3 BTM_{it} + \alpha_4 SIZE_{it} + \alpha_5 INFO_{it} + \alpha_6 Tobin'sQindustry_{it} + u_{i,t}$$

Hypothesis 2

To test the first hypothesis I use a fixed-effects panel data model with antitakeover defences as independent variable and firm performance as dependent variable. I use both ROA and EPS as proxies for performance which leads to the following two regression equations

$$ROA_{it} = \beta_i + \beta_t + \beta_1 Aindex_{it} + \beta_2 Lev_{it} + \beta_3 BTM_{it} + \beta_4 SIZE_{it} + \beta_5 INFO_{it} + \beta_6 ROAindustry_{it} + u_{i,t}$$

$$EPS_{it} = \gamma_i + \gamma_t + \gamma_1 Aindex_{it} + \gamma_2 Lev_{it} + \gamma_3 BTM_{it} + \gamma_4 SIZE_{it} + \gamma_5 INFO_{it} + \gamma_6 EPSindustry_{it} + u_{i,t}$$

Hypothesis 3

To test the second hypothesis I use a fixed-effects panel data model with antitakeover defences as independent variable and riskiness as dependent variable. I use Beta as a proxy for riskiness, resulting in the following regression equation

$$Beta_{it} = \delta_i + \delta_t + \delta_1 Aindex_{it} + \delta_2 Lev_{it} + \delta_3 INFO_{it} + \delta_4 Dividendspershare_{it} + \delta_5 Betaindustry_{it} + u_{i,t}$$

In the equations above α_1, β_1, γ_1 and δ_1 are the coefficients of interest respectively. They capture the coefficient that relates to $Aindex_{it}$ that stands for the antitakeover defence index. α_i, β_i, γ_i, and δ_i capture the time-invariant firm-fixed effects. α_t, β_t, γ_t, and δ_t capture time-

specific fixed-effects. The other terms capture the control variables, Lev_{it} is the leverage ratio of firm i at time t. BTM_{it} is the book-to-market ratio of firm i at time t. $SIZE_{it}$ is the natural logarithm of total assets of firm i at time t. $INFO_{it}$ is the natural logarithm of the bid-ask spread of firm i at time t. $Tobin'sqindustry_{it}$, $ROAindustry_{it}$, $EPSindustry_{it}$, and $Betaindustry_{it}$ capture the average value of all other firms competing in the same industry of ROA, EPS, Tobin's Q, and Beta respectively. In the next section I outline the construction of all variables.

3.2 Creation of variables

In this subsection I describe the creation of both the dependent and the independent variables.

3.2.1 *Dependent variables*

The literature review partly described the intuition and methodology for the creation of the dependent variables. This section elaborates on computation of the variables used in this research.

Hypothesis 1: Firm value

Tobin's Q is a widely used proxy for firm value in corporate governance related studies (Gompers et al., 2003). Tobin's Q is the ratio of market value of assets to book value of assets. I refer to Gompers et al. (2003) who define the market value of assets as the book value of assets and the market value of equity minus the book value of common equity minus deferred taxes. The total book value of assets, common equity and deferred taxes are all balance sheet items directly retrievable from Compustat/CRSP. The market value of equity is defined as total common shares outstanding times the closing stock price.

Hypothesis 2: Firm performance

Past literature provides a vast amount of proxies for firm performance, being accounting-based as well as market-based. I use return on assets (ROA) as an accounting based measure. ROA is defined as net income divided by total assets, two variables which can be retrieved directly from the merged dataset of Compustat/CRSP. Earnings per share (EPS) is the market-based proxy for performance used in this study. It is defined as net income divided by total common shares outstanding, two variables that can be retrieved directly from Compustat/CRSP. Both variables are ratios with the same nominator and only differ in their denominator.

Hypothesis 3: Riskiness

The riskiness of a firm is widely interpretable, in this study I aim to test the riskiness of the firm. A commonly used measure of systematic risk is a firm's Beta. Beta is a measure of a stock's systematic risk in comparison to the market, and is calculated by the following formula

$$Beta = \frac{Covariance(Re_{it}, Rm_t)}{Variance(Rm_{t)}}$$

In this formula Re_{it} stands for the return on the stock of firm i at time t, Rm_t stands for the return on a market portfolio at time t. I use the 12-month Beta, to incorporate stock price fluctuations in the particular year. Taking Beta over a longer period would incorporate stock price fluctuations over a longer period, which could not have been caused by the number of takeover defences implemented in time t.

3.2.2 *Independent variables*

The tests for all three hypotheses involve the same independent variable, being antitakeover defences. I use two indices to proxy for the strength of takeover defences.

Antitakeover index (A-Index)

As argued before, the most widely used variable to proxy for antitakeover defences is the G-index by Gompers et al. (2003). However, since data on this measure is only available for a limited number of years up to and including 2006 I construct a similar measure using their methodology. I use a similar measure to that from Gompers et al. (2003) to proxy for 'shareholder rights'. To construct the measure I record whether an antitakeover defences is present for a given firm-year observation. Although some defences might vary in its strength of adoption I simply record 'implemented' or 'not implemented', which is a necessary assumption to construct a particular index. The construction of this index is as follows: for each antitakeover defence a firm has implemented, a point is added to the score. Since the dataset provides fourteen antitakeover defences this indicates that the scores might vary between zero and fourteen. A score of zero indicates the firm did not adopt any of the given defences and a score of fourteen indicates a firm adopted all of the given defences. Table 1 provides a list of all fourteen defences.

Most antitakeover defences provide managers with the ability to limit the rights of shareholders, since shareholders can sell their stock less easily (Gompers et al., 2003). However, there are two exceptions: Cumulative Voting and Confidential Voting. Cumulative

Voting provides shareholders with the ability to concentrate their votes, each shareholder obtains one vote per share times the amount of directors elected. Shareholders can place all their votes to one candidate, which benefits minority shareholders. Under Confidential Voting there is an independent third party that counts proxy votes, with the consequence that management does not look at individual proxy cards. Under proxy voting a shareholder can vote on behalf of another shareholder that is not able to attend the meeting. As management is not able to look into the proxy votes, this reduces potential agency conflicts since shareholders can vote in secrecy which reduces the pressure of voting. Therefore I predict these two takeover defences to decrease the agency conflict between managers and shareholders. For these two defences therefore I deduct one point from the score.

Entrenchment index (E-index)

Several studies argue that not every takeover defence is equally effective (e.g. Bebchuk et al., 2009; Brown and Caylor, 2005; Cremers and Nair, 2005). Based on this assertion, Bebchuk et al. (2008) developed the E-index. This index is constructed in the same way as the A-index, with the only difference that the E-index consists of six 'key' defences. These defences are Staggered Boards, Limits to Amend Bylaws, Limits to Amend Charter, Supermajority to Approve Mergers, Golden Parachutes, and Poison Pills. Since the Governance database of the IRRC provides data on all these six defences I am able to replicate this index for the years 2011-2018. For each defence a firm has adopted I add one point to the score, leading to a maximum score of six and a minimum of zero.

3.2.3 Control variables

This paragraph outlines the control variables I use to conduct this research. The set of general control variables is rather extensive, however I do provide some control variables that can apply to the specific dependent variables only. Since the general control variables capture the agency conflict between managers and shareholders, I do not add particular variables that relate to the conflict. I use a cut-off value of 10% for control variables to be included in the models. This leads to a set of control variables that is equal for hypotheses 1 and 2, the set of control variables slightly differs for hypothesis 3. First, I outline the control variables used for hypotheses 1 and 2. Second, I outline the hypothesis-specific control variables.

Control variables hypotheses 1 and 2

First, I control for size by adding the natural logarithm of total assets to the regression equations, since past literature finds that the size of the firm is related to takeover defences, firm

performance, firm value and riskiness (Reisel, 2014, Shin and Stulz, 2000; Ellul and Yerramilli, 2013). I include Leverage to all regression equations, since a vast amount of literature argues that the issuance of debt mitigates the conflict between managers and shareholders (e.g. Aivazian et al., 2005; Billet et al., 2007; Mauer and Sarkar, 2005). I define Leverage as total debt divided by total assets, based on Aivazian et al (2005). I use the book value of debt since the market value of debt is notoriously hard to measure (Adam and Goyal, 2008). I include the book-to-market ratio (BTM), as a proxy for growth opportunities, in which a higher value indicates a lower value of growth opportunities. Agency conflicts are more likely to arise in firms with relatively many growth opportunities (Dey, 2008). BTM is defined as the book value per share divided by the market value per share. I use the book-to market ratio instead of the market-to-book ratio (MTB) because of the existence of negative book values. If firms have a negative book values this means that the BTM and MTB turn negative too. This would mean that, given that a firm has a negative book value per share, the MTB becomes lower when the market value per share increases (since the number becomes more negative). This would indicate that the number of growth opportunities is lower when the market value per share is higher, therefore this results in that all firms with negative MTB ratios are useless. However, the opposite is true for the BTM ratio, as in this case, given that the book value per share is negative, the BTM ratio becomes smaller when the market value per share increases (since the number becomes more negative). This means that the number of growth opportunities is increasing when the market price per share increases. The agency conflict between management and shareholders is driven by information asymmetry, therefore higher levels of information asymmetry between the parties likely lead to higher levels of agency costs. A commonly used measure for information asymmetry is the bid-ask spread. I refer to Fu et al. (2012) and calculate the monthly bid-ask spread as follows (ask-bid)/((ask+bid)/2). I use the average bid-ask spread over a year as a proxy for information asymmetry of that given year.

Hypothesis 1

To control for industry firm-value I add the average Tobin's Q to the regression equations based on the two digit SIC code. To control for whether the firm operates in a good performing industry I control for the average performance in the particular industry, based on the two digit SIC code. Hypothesis-specific control variables

Hypothesis 2

To control for industry firm-value I add the average Tobin`s Q to the regression equations based on the two digit SIC code.

Hypothesis 3

As in the regressions for hypotheses 1 and 2 I add Leverage and Ln(info) as control variables. In addition, I add Dividends as a control variable, which I define as 'cash dividends paid per share', since dividend paying firms are having slightly lower Betas than non-dividend paying firms (Fuller and Goldstein, 2011). I control for the industry average Beta to control for whether the firm operates in a relatively volatile industry. I add the average Beta in a given year for a particular industry based on the two digit SIC code.

3.2 Data

This section describes and explains the process of data gathering and data cleansing. Second does this section explain the creation of both the independent and dependent variables. Furthermore, this section does give a brief description of the data.

3.2.1 Data gathering

I retrieve corporate governance data from Institutional Shareholder Services (ISS) which can be accessed via WRDS. The database provides data of 3,456 firms located in the US of the years 2007 up to and including 2018. I avoid crisis years and retrieve corporate governance data for the years 2011 up to and including 2018, which leads to a dataset of 13,479 firm-year observations. The financial crisis showed a huge decline in takeover activity which most likely affects the adoption of antitakeover defences (Grave et al., 2012). Thereby were the three independent variables corporate performance, firm value and corporate risk taking also influenced by the financial crisis. To calculate Beta I retrieve the 12-month firm's Beta from the Beta Suite by WRDS that provides Beta for a particular firm in a given time period. The dataset provides the 12 month Beta for every month for the years 2011-2017, for these years I retrieve the Beta of December so that the Beta of a particular year also incorporates the volatility of a stock over that given year. However, for 2018 the dataset provides only data on Beta up to and including June, therefore I retrieve the Beta of June for the firm-year observations in 2018. In order to calculate the bid-ask spread I retrieve the monthly closing bid and closing ask from CRSP Monthly Stock File database.

I drop all firms with dual class stocks. Firms with dual class structures are firms with at least two classes of shares with different voting rights (Gompers et al., 2009). Dual class firms consist typically of two classes of stock, being an 'inferior' class with one vote per share and a 'superior' class with ten votes per share. The superior class is non-publicly traded and mostly owned by the firm's insiders. This results in the insiders owning a majority of votes.

Table 1

Percentage of takeover defences enacted per year

Takeover defence	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Blank Check Preferred	93.5%	93.7%	93.8%	93.4%	93.7%	93.7%	92.7%	93.8%
Classified Board	46.1%	43.7%	40.6%	37.3%	34.6%	32.9%	43.6%	31.3%
Confidential Voting	13.2%	13.1%	12.6%	12.5%	12.3%	12.0%	7.9%	11.9%
Cumulative Voting	5.9%	5.8%	5.6%	5.3%	4.9%	4.1%	3.4%	3.2%
Fair Price	13.6%	13.2%	12.9%	12.4%	12.3%	12.0%	7.9%	11.4%
Golden Parachutes	84.0%	84.1%	84.5%	84.3%	79.4%	84.5%	82.0%	85.6%
Limit Ability to Amend ByLaws	88.5%	88.7%	88.5%	88.2%	89.0%	89.3%	90.4%	92.3%
Limit Ability to Amend Charter	92.5%	94.7%	95.3%	97.2%	97.8%	98.0%	97.8%	98.9%
Limit Ability to Call Special Meeting	48.1%	49.2%	53.3%	54.4%	55.5%	56.2%	51.8%	59.4%
Limit Ability to Act by Written Consent	59.6%	60.8%	60.0%	60.9%	60.8%	60.0%	55.5%	58.9%
Majority Vote Requirement	42.0%	47.6%	51.3%	56.3%	59.8%	64.9%	50.6%	70.8%
Poison Pill	17.0%	14.0%	10.9%	10.0%	7.6%	4.9%	4.1%	1.7%
Unequal Voting Rights	0%	0.2%	1.5%	1.2%	0.8%	0.7%	0.9%	0.7%
Supermajority to Approve Mergers	95.2%	94.0%	94.0%	94.4%	95.5%	96.0%	96.3%	97.5%

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. The table provides data on the yearly percentage of number of firms that have adopted the particular takeover defence. Data is retrieved from the Governance dataset from IRRC. The appendix provides a discussion of each particular antitakeover defence.

Therefore, dual class stock structures are considered an antitakeover defences itself and Gompers et al. (2009) argue that these firms are immune to a hostile takeover, and are therefore incomparable to firms with single class stock structures. The IRRC database provides data on whether a firm has a dual class stock structure. Of the of 13,479 firm-year observations in total 275 firms (8%), distributed over 884 firm-year observations, have a dual class governance structure. After deleting these firms from the sample, the sample consists of 3,181 firms and 12,595 firm-year observations. A merged dataset from Compustat/CRSP provides financial and accounting data for 2,919 of the aforementioned 3,181 firms for the years 1950-2018. Merging these two datasets leads to a raw panel data set of 11,531 observations distributed over these 2,919 firms. The sample consists of firm-year observations which' fiscal year is not equal to its reporting date. I delete all firm-year observations which' fiscal year was in 2010. This results in a sample of 2,897 firms and 11,547 firm-year observations. After deleting all firm-year observations that lack data on any variable my final sample consists of 2,894 firms and 11,531 firm-year observations.

Table 2

Descriptive statistics of the dependent variables

Panel A: A-index

Year	Obs.	Min	Max	Mean	Std.
2011	1236	2	11	6.62	1.30
2012	1254	2	11	6.67	1.28
2013	1278	1	11	6.71	1.27
2014	1289	1	11	6.74	1.25
2015	1316	1	11	6.71	1.23
2016	1350	1	10	6.78	1.19
2017	2568	0	10	6.63	1.25
2018	1240	3	11	6.87	1.15

Panel B: E-index

2011	1236	1	6	4.23	0.94
2012	1254	1	6	4.19	0.91
2013	1278	1	6	4.14	0.88
2014	1289	1	6	4.12	0.86
2015	1316	1	6	4.04	0.84
2016	1350	1	6	4.06	0.78
2017	2568	0	6	4.13	0.84
2018	1240	1	6	4.07	0.70

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from the Governance dataset from IRRC. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices.

3.2.2 Data description

Of the total sample 1,407 firms are listed at NYSE, and 1,433 firms are listed at NASDAQ, while 54 firms are listed at other indices in the US. Table 1 provides a list of all fourteen antitakeover defences I use to construct the A-index. It provides the percentage of firms that enacted the particular defence in given year. The table shows that most firms have enacted the Blank Check Preferred and the Supermajority to Approve Mergers defence. One can observe several trends in table 1, the percentage of firms with staggered boards slightly decreases over time, apart from 2017. Early work on Classified Boards focuses on the time period of 1995-2002 and finds the structures of boards do not vary much over time (e.g. Bebchuk and Cohen,

2005; Faleye, 2007; Bebchuk et al., 2009). This means that once firms stagger their boards, they are unlikely to de-stagger on the short run.

Unequal Voting Rights is the defence that was adopted by the lowest amount of firms. In 2011 even none of the firms from the sample had the Unequal Voting Rights enacted. This logically follows from the fact that all firms with dual class structures are not included in the sample, and the presence of dual class structures leads to Unequal Voting Rights.

Worth noting is the decrease in the percentage of Poison Pills adopted, that shows a decline from 17% in 2011 to only 1.7% in 2018. This most likely follows from the fact that nowadays shareholders demand more transparency from managers after the implementation of SOX in 2002. After the invention of the Poison Pill in 1985 its popularity as a takeover defence increased much. Karpoff et al (2015) document a number[1] varying between 50% and 60% of firms that adopted a Poison Pill in the years 1990 up to and including 2006. Gine et al. (2017) document an increase in shareholder proposals against Poison Pills in the years 2001-2005. According to FactSet SharkRepellent in 2001 there were 2,218 firms in the US that had adopted a Poison Pill plan, which fell to only 1,000 in 2010. This highlights the decreased popularity of Poison Pills by shareholders over time. However, the percentages might be misleading since having a Blank Check Preferred defence enacted leads to managers being able to adopt a Poison Pill without shareholder's approval. Since more than 90% of the sample has a Blank Check Preferred, most firms can adopt a Poison Pill whenever one is needed.

Of the two takeover defences implemented by shareholders Confidential Voting is implemented more often than Cumulative Voting. The number of firms that adopted Cumulative Voting does decrease each year by a few percentage points. Cumulative Voting shows a decreasing trend as 18.8% had adopted this defence in in 1990, but the number decreased to 8.8% in 2006 (Karpoff et al., 2015). In 1990 only 2.5% had enacted Confidential Voting, a number that slightly over time.

Table 2 provides yearly data on certain descriptive statistics of the two dependent variables. From the table it becomes clear that the A-index varies between zero and eleven, the E-index varies from zero to six. The maximum possible score of the A-index is twelve, meaning that none of the firms of the sample reaches the maximum score possible. Worth noting is that the

[1] This percentage is based on the sample consisting of S&P 1500 firms

IRRC database has significantly more data on the year 2017 relative to the other years, therefore the sample contains most observations of the year 2017.

3.3 Validity and endogeneity issues

Endogeneity is a concern especially in corporate governance studies (Wintoki et al., 2012). Endogeneity in corporate governance studies can arise from three possible sources.

(i) *Unobserved heterogeneity* can arise if the adoption of takeover defences on the one hand and firm value, performance and risk on the other hand are both determined by unobservable firm-specific factors

(ii) *Simultaneity* arises if both the adoption of takeover defences and firm value, performance and risk are both determined simultaneously in the period I observe their respective values

(iii) *Dynamic endogeneity* would arise if the adoption of takeover defences depends on past firm value, performance or risk

Estimating Ordinary least squares (OLS) models would ignore all those three potential sources of endogeneity, resulting in biased results. I use a fixed-effects panel data regression models to mitigate to first source of endogeneity, since the fixed-effect absorbs all unobservable firm-specific factors. However I should be aware that endogeneity concerns cannot be fully excluded, since the fixed-effects model cannot control for simultaneity and dynamic endogeneity. Since a decrease in firm value likely increases the attractiveness of the firm of being a target in a takeover, reverse causality might become a problem. Also managers that work at poor performing firms might feel relatively more pressure from the market for corporate control. This simply follows from the reasoning that acquirers do not have incentives to replace 'good' performing management. This might affect their choice to adopt antitakeover defences.

Since this is an observational study that does not use random sampling I can also not fully exclude the omitted variable bias, as there might be firm-specific factors that drive the within relation with on the one hand the number of adopted takeover defences and on the other hand firm value, performance, and risk. These issues mentioned above can be threats to internal validity.

3.4 Summary

In summary, in this thesis I test whether the number of enacted antitakeover defences has a negative association with firm value, firm performance, and firm risk. I use two indices to

proxy for antitakeover defences, the A-index and the E-index. The A-index is based on fourteen antitakeover defences which are stated in table 1.

I use Tobin's Q as proxy for firm value, EPS and ROA as proxies for firm performance, and Beta as proxy for firm risk. I use a panel data regression model with cluster-robust standard errors, which means that I carry out a robust version of the Hausman-Wu test to determine whether the fixed-effects or random-effects model is the appropriate model to use for all particular regressions. I add both general control variables as hypothesis-specific control variables to the regressions.

I gather data from Compustat/CRSP, ISS, Beta Suite, and CRSP Monthly Stock File, after merging all relevant data from all datasets the sample consists of 2,824 US firms and 11,304 firm-year observations in the years 2011-2018.

4. Results

4.1 Introduction

This section provides the results of this thesis. First I describe the distribution of the data. Then I provide descriptive statistics and correlation coefficients. In the fourth subsection I provide and interpret the results of the empirical tests on the hypotheses. Subsection five performs additional tests, including robustness tests. At last subsection six summarizes.

4.2 Distribution and assumptions

Stock and Watson (2015) argue there are three assumptions that need to be satisfied in order to use fixed-effects panel data regression models. First, the conditional mean of the error-term should be equal to zero. I find that the error-terms for all regressions are equal to zero, therefore the first assumption is satisfied. Second, the sample should not suffer from extreme outliers. Table 3 provides descriptive statistics for all variables. From the minima and maxima one can observe that the sample suffers from some serious outliers. Beta, for instance, reports a minimum of -837.52 and a maximum of 20. The lowest value of EPS is -105.31 and the highest value is 222.81. To mitigate the effect of outliers I winsorize the variables ROA, EPS, Tobin's Q, Beta, and BTM, I do not winsorize Ln(size) and Ln(info) since these variables are already compressed as I took the natural logarithm. In addition, I do not winsorize the variable Leverage since it does not contain serious outliers that have to be accounted for.

Table 4 provides Pearson correlation coefficients for all variables. The strongest correlation (ρ=-0.60) between two predictor variables is the correlation between Ln(size) and Ln(info). This suggests that smaller firms do have relatively higher bid ask spreads. Franke (2010) argues that correlations above 0.80 between two predictor variables may induce multicollinearity. Since the highest correlation coefficient that I find is -0.60, I do not consider multicollinearity as a concern in this study. In addition I compute the compute the variation inflation factor (VIF) of the independent variables of the regression models. I do find the highest VIF being 1.57, which is below the threshold of 10 (Neter et al., 1996). Also Green (2008) states that multicollinearity is not a big concern in panel data models. Therefore I do not consider multicollinearity as a threat in the regression models.

Since panel data involves time-series autocorrelation may be a threat (Woolridge, 2013). I use cluster-robust standard errors, therefore I control for heteroscedasticity and autocorrelation. Table 10 in the appendix provides skewness and kurtosis of the selected variables. The value of skewness for the selected variables are not equal to 0, but do not exceed the absolute value

Table 3

Descriptive statistics of all dependent and control variables

	Min	Max	Mean	Median	Std.
Tobin's Q	0.41	192.32	1.97	1.50	2.31
EPS	-13.72	4.02	0.03	0.04	0.21
ROA	-105.31	222.81	2.22	1.71	5.71
Beta	-837.52	20.01	1.12	1.13	7.85
Leverage	0.00	3.89	0.22	0.18	0.22
BTM	-15.89	30.17	0.51	0.43	0.60
Ln(size)	-0.02	14.78	8.15	8.07	1.76
Ln(info)	-9.19	-1.98	-6.89	-7.02	0.94

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the minimum, maximum, mean, median and standard deviation for each selected variable. *Tobin's Q* is defined as the market value of equity plus book value of preferred stock and debt divided by total assets. *ROA* is defined as net income divided by total assets. *EPS* is defined as net income divided by total assets. *Dividends* is defined as cash dividends paid divided by total shares outstanding. Beta is the 12 month monthly covariance of a particular stock with the market divided by the variance of the market. *BTM* is defined as book value per share divided by market value per share. Ln(size) is the natural logarithm of total assets, and Ln(info) is the natural logarithm of the average bid-ask spread over a year. *Leverage* is defined as total debt divided by total assets.

of 1. Therefore the selected variables are moderately skewed (Wooldridge, 2010). Kurtosis levels are between 2 and 4, since normal distribution has a skewness of 0 and kurtosis of 3 I consider the variables approximately normal. In addition, the central limit theorem, however, states that when the sample size is large enough, the sampling distribution will be approximately normal (Woolridge, 2010). This indicates that the error-terms will be distributed approximately normal. Also, since normality is not required in order to use a fixed-effects panel data model I do not consider the reported values of skewness and kurtosis a threat to statistical inferences.

4.3 Descriptive statistics

Table 3 provides descriptive statistics of all independent variables used in this thesis. On average firms have a Tobin's Q of 1.97, and the median is 1.50. On average firms have earnings per share of 0.03 and the average ROA is 2.22. For my sample of firms, the average Beta is equal to 1.12, which indicates that on average firms in my sample are slightly more volatile than the market. The average leverage ratio is 0.22, meaning that on average 22% of the firms' total assets is financed with debt. The variable BTM has a value of 0.51 on average, which means that on average my sample of firms the market value of equity is twice the book value of equity.

Table 4

Pearson correlation coefficients for selected variables

Variable	1	2	3	4	5	6	7	8	9	10
1. A-index										
2. E-index	0.52									
3. Tobin's Q	-0.13***	0.00								
4. ROA	-0.06***	-0.08***	0.52***							
5. EPS	0.04***	-0.10***	0.10***	0.61***						
6. Beta	0.01	0.06***	-0.08***	-0.05***	-0.04***					
7. Leverage	0.02**	-0.05***	0.04***	-0.03***	-0.02**	-0.01				
8. BTM	0.07***	0.01	-0.79***	-0.43***	-0.16***	0.09***	-0.23***			
9. Ln(size)	0.15***	-0.16***	-0.33***	-0.04***	0.41***	-0.01	0.07***	0.18***		
10. Ln(info)	-0.11***	0.07***	-0.15***	-0.33***	-0.53***	0.05***	-0.11***	0.25***	-0.60***	
11. Dividends	0.02	-0.16***	0.03***	0.15***	0.37***	-0.09***	0.11***	-0.11***	0.30***	-0.32***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the Pearson correlation coefficients of the selected variables. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Tobin's Q* is defined as the market value of equity plus book value of preferred stock and debt divided by total assets. *ROA* is defined as net income divided by total assets. *EPS* is defined as net income divided by total assets. Beta is the 12 month monthly covariance of a particular stock with the market divided by the variance of the market. *Leverage* is defined as total debt divided by total assets. *BTM* is defined as book value per share divided by market value per share. Ln(size) is the natural logarithm of total assets, and Ln(info) is the natural logarithm of the average bid-ask spread over a year. *Dividends* is defined as cash dividends paid divided by total shares outstanding. ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

4.4 Correlation coefficients

Table 4 provides Pearson correlation coefficients for all variables. Logically the E-index and the A-index strongly correlate with a correlation coefficient of 0.52, since these are the variables that proxy for the amount of takeover defences. The same argument counts for ROA and EPS, both proxies for firm performance, as these two have a positive correlation coefficient of 0.61.

In line with the theoretical predictions of this thesis both Tobin's Q and ROA have a negative and significant correlation at the 1% level with both the A-index and the E-index. EPS negatively correlates with the E-index, but positively correlates with the A-index. This might follow from the fact that share repurchases are also considered to be a takeover defence. Since share repurchases boost the stock price, therefore making the firm less attractive as a target, firms use share repurchases as a takeover defence (Ramsay and Lamba, 2000). Since buying back shares increases EPS (because of a decrease in the nominator) and potentially correlates

with the A-index, this might explain the positive correlation between EPS and the A-index. Interestingly, Beta does have a positive correlation coefficient with both the A-index and the E-index.

Several variables do significantly correlate, for instance Tobin's Q and ROA report a significantly positive correlation of 0.51. This positive correlation shows that firm performance and firm value are positively related. The highest correlation coefficient the table reports is the correlation between BTM and Tobin's Q (ρ=-.79). Reason for this high coefficient is that BTM is the ratio of book value of equity to market value of equity, while Tobin's Q measures the ratio of market value of the firm to the replacement costs of assets, which essentially is the opposite of the BTM ratio.

4.5 Results on the empirical tests of the hypotheses

As mentioned in the research design I use a fixed-effects panel data model. The tables with the regression outputs provide the Sargan-Hansen test statistic of the robust version of the Hausman tests. For all models, the test statistic is significant at the 1% level, indicating the fixed-effects model is the preferred model. Columns do include year-fixed effects, when the test statistic of the F-test rejects the null hypothesis that all years are jointly equal to zero.

4.5.1 Results hypothesis 1

Table 5 provides the output of Tobin's Q regressed on both the A-index and the E-index. After rounding to two decimals the within R-squared levels for all models are 0.52, which is rather high. This states that the models account for approximately 52% of the within unit variation. The F-values for joint significance do increase after adding the industry Tobin's Q to the regressions. This indicates that explanatory power of models does improve after including the industry average. The F-statistic for year fixed-effects decreases after adding the industry average Tobin's Q in a given year as a control variable. This is because the industry average Tobin's Q in a given year captures a significant part of the yearly variation in Tobin's Q that otherwise would have been captured by the year fixed-effect.

Column 1 provides the results of the fixed-effects panel data regression model with A-index as the independent variable and I do find a significantly negative coefficient for the A-index

Table 5
Regression results with Tobin's Q as dependent variable

	Predicted sign	(1)	(2)	(3)	(4)
Intercept	?	3.48***	2.92***	3.44***	2.87***
		(20.74)	(15.87)	(20.54)	(15.66)
A-index	(-)	-0.01*	-0.01*		
		(-1.81)	(-1.80)		
E-index	(-)			-0.01	-0.01
				(-0.85)	(-0.73)
Leverage	(-)	-0.39***	-0.39***	-0.39***	-1.56***
		(-5.35)	(-5.27)	(-5.34)	(-30.54)
BTM	(-)	-1.58***	-1.56***	-1.58***	-0.21***
		(-31.36)	(-30.60)	(-31.31)	(-9.03)
Ln(size)	(-)	-0.20***	-0.21***	-0.21***	-0.21***
		(-8.90)	(-8.98)	(-8.95)	(-9.03)
Ln(info)	(-)	-0.12***	-0.12***	-0.12***	-0.12***
		(-8.98)	(-8.98)	(-8.99)	(-8.99)
Industry Tobin's Q	(+)		0.36***		0.35***
			(8.36)		(8.34)
Firm fixed effects[a]		150.31***	117.21***	149.07***	116.96***
Year fixed effects[b]		15.04***	9.11***	14.31***	8.84***
Within R^2		0.52	0.52	0.52	0.52
Model F[c]		140.82***	144.89***	140.69***	144.94***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the regression coefficients of the regressions with Tobin's Q as dependent variable. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Leverage* is defined as total debt divided by total assets. *BTM* is defined as book value per share divided by market value per share. *Ln(size)* is the natural logarithm of total assets, and *Ln(info)* is the natural logarithm of the average bid-ask spread over a year. *Industry Tobin's Q* is the industry average value of Tobin's Q in a given year based on the two-digit SIC code. The table reports the coefficients of the fixed-effects regressions and z-statistics (in parentheses) based on robust standard-errors (Wooldridge, 2002). ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

[a] Table reports the Sargan-Hansen statistic following from the robust Hausman test
[b] Table reports the F-statistic of joint significance of fixed-effects
[c] Table reports the F-statistic of joint significance of all regressors

(p=0.07). This suggest that implementing one additional takeover defence leads to a decrease of Tobin's Q of 0.01. The result holds after adding the yearly industry average Tobin's Q to the regression. However the effect is statistically significant, the magnitude of the estimated coefficient is rather small, since Tobin's Q only decreases by 0.01. Column 3 provides the results of the fixed-effects panel data regression model with E-index as the independent variable and I do find negative coefficient for the E-index. I do find that the results for the E-index are negative, but not significant at the 10% level (p=0.47). The findings suggest that the negative relation between the adoption of takeover defences and firm value is not driven by the implementation of only some 'key' takeover defences as suggested by Bebchuk et al. (2008), since an increase in the E-index does not significantly decrease the value of the firm. Since several studies argue that the takeover defences included in the E-index are more effective in their ability to prevent hostile takeovers (e.g. Bebchuk et al, 2009; Cremers and Nair, 2005;), the finding is rather contrasting. My finding suggests that the variation in the E-index has no association with variation in firm value. One interpretation of this finding is that in order to mitigate pressure from the market for corporate control to execute opportunistic behaviour, the takeover defences included in the E-index are not more effective than all other takeover defences. To further explain this I refer to table 1, which provides data on what percentage of the sample enacted a particular takeover defence in a given year. The E-index consists of Staggered Boards, Limits to Amend Bylaws, Limits to Amend Charter, Supermajority to Approve Mergers, Golden Parachutes, and Poison Pills. From the table 1 can notice that apart from Poison Pills and Classified Boards all of the six takeover defences are adopted by at least 80% of the total sample in each year. In addition, table 2 shows that the average value of the E-index for each year is at least equal to 4. Bebchuk et al (2009) report an average E-index of 2.24 in 1990 and 2.49 in 2002. This shows that on average the score of the E-index almost doubled during the period in between. On the one hand the takeover defences included in this index are considered to be more effective in their ability to protect firms from takeovers, thereby mitigating pressure from the market for corporate control. On the other hand, on average firms already have adopted at least 4 of the 6 defences included in the E-index. Therefore it is questionable whether adopting another additional takeover defence would be beneficial for managers in order to mitigate pressure from the market for corporate control. Table 2 reports that on average the A-index reports an average score of approximately 6 each year. Since the maximum score of the A-index is 12, this suggests that on average firms only have implemented half of the takeover defences incorporated in the A-index. Therefore it is more likely that firms adopt one additional takeover defence that

Table 6

Regression results with ROA as dependent variable

	Predicted sign	(1)	(2)	(3)	(4)
Intercept	?	0.05***	0.03**	0.03	0.04***
		(3.19)	(2.05)	(1.63)	(2.64)
A-index	(-)	-0.00	-0.00		
		(-1.13)	(-1.20)		
E-index	(-)			0.00	0.00
				(0.67)	(0.47)
Leverage	(-)	-0.08***	-0.08***	-0.08***	-0.08***
		(-8.05)	(-7.77)	(-8.05)	(-7.78)
BTM	(-)	-0.04***	-0.04***	-0.04***	-0.04***
		(-10.45)	(-10.26)	(-10.45)	(-10.26)
Ln(size)	(-)	-0.01**	-0.01***	-0.01**	-0.01***
		(-2.49)	(-2.67)	(-2.52)	(-2.70)
Ln(info)	(-)	-0.01***	-0.01***	-0.01***	-0.01***
		(-10.95)	(-10.76)	(-10.96)	(-10.78)
Industry ROA	(+)		0.45***		0.45***
			(7.41)		(7.38)
Firm fixed effects[a]		184.40***	172.06***	214.05***	205.53***
Year fixed effects[b]		17.31***	11.24***	16.82***	10.86***
Within R^2		0.17	0.18	0.17	0.18
Model F[c]		51.23***	51.34***	51.35***	51.41***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the regression coefficients of the regressions with ROA as dependent variable. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Leverage* is defined as total debt divided by total assets. *BTM* is defined as book value per share divided by market value per share. *Ln(size)* is the natural logarithm of total assets, and *Ln(info)* is the natural logarithm of the average bid-ask spread over a year. *Industry ROA* is the industry average value of ROA in a given year based on the two-digit SIC code. The table reports the coefficients of the fixed-effects regressions and z-statistics (in parentheses) based on robust standard-errors (Wooldridge, 2002). ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

[a] Table reports the Sargan-Hansen statistic following from the robust Hausman test
[b] Table reports the F-statistic of joint significance of fixed-effects
[c] Table reports the F-statistic of joint significance of all regressors

Table 7

Regression results with EPS as dependent variable

	Predicted sign	(1)	(2)	(3)	(4)
Intercept	?	-5.39***	-6.01***	-5.52***	-6.12***
		(-8.41)	(-9.32)	(-8.54)	(-9.43)
A-index	(-)	0.01	0.01		
		(0.49)	(0.37)		
E-index	(-)			0.05	0.04
				(1.24)	(1.01)
Leverage	(-)	-1.94***	-1.77***	-1.94***	-1.77***
		(-4.99)	(-4.68)	(-5.00)	(-4.68)
BTM	(-)	-1.19***	-1.15***	-1.19***	-1.15***
		(-7.88)	(-7.64)	(-7.89)	(-7.65)
Ln(size)	(-)	0.57***	0.53***	0.57***	0.53***
		(6.39)	(6.00)	(6.40)	(6.01)
Ln(info)	(-)	-0.55***	-0.51***	-0.55***	-0.51***
		(-11.61)	(-11.13)	(-11.61)	(-11.14)
Industry EPS	(+)		0.56***		0.56***
			(6.67)		(6.66)
Firm fixed effects[a]		45.17***	37.69***	57.30***	46.87***
Year fixed effects[b]		11.95***	10.01***	14.31***	9.82***
Within R^2		0.12	0.13	0.12	0.13
Model F[c]		43.54***	44.07***	43.53***	44.13***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the regression coefficients of the regressions with EPS as dependent variable. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Leverage* is defined as total debt divided by total assets. *BTM* is defined as book value per share divided by market value per share. *Ln(size)* is the natural logarithm of total assets, and *Ln(info)* is the natural logarithm of the average bid-ask spread over a year. *Industry EPS* is the industry average value of EPS in a given year based on the two-digit SIC code. The table reports the coefficients of the fixed-effects regressions and z-statistics (in parentheses) based on robust standard-errors (Wooldridge, 2002). ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

[a] Table reports the Sargan-Hansen statistic following from the robust Hausman test
[b] Table reports the F-statistic of joint significance of fixed-effects
[c] Table reports the F-statistic of joint significance of all regressors

increases the A-index than that firms adopt an additional takeover defence that increases the E-index. Also, since the A-index consists of fourteen defences and the E-index consists of only six defences the A-index contains more within variation. The fixed-effects model tests within variation, therefore the probability of the A-index to have a significant coefficient is higher, as it contains more variation than the E-index. This might explain why increases in the E-index do not significantly lead to decreases in firm value, while increases in the A-index do.

4.5.2 Results of hypothesis 2

Table 6 provides the output of ROA regressed on both the A-index and E-index. In table 5, column 1 and 2 do provide results with the A-index as independent variable, and column 3 and 4 do provide results with the E-index as independent variable. The within R-squared for the models without the industry average ROA included are after rounding to two decimals equal to 0.17, the models with the yearly industry average ROA included have a within R-squared of 0.18. These levels of within R-squared are much lower relative to the values of the within of the models with Tobin's Q as dependent variable. This suggests that the less of the variation of ROA is explained by the selected variables compared to Tobin's Q. This most likely follows from the fact that ROA captures the firm performance over the past year, while Tobin's Q essentially captures long-term firm performance. Since the performance over the past year fluctuates more than the value of the firm the independent variables capture more variation of Tobin's Q than ROA. Column 2 and 4 show that the F-statistic for joint significance of the year-fixed effects drops after including the yearly industry average of ROA, suggesting the yearly industry average captures a vast amount of yearly variation of ROA. I find that the F-values for joint significance of the regressors do increase after the inclusion of the industry ROA, suggesting the models do improve.

The coefficient of A-index is negative, which indicates both are negatively related. However the effect is insignificant (p=0.24) which suggests that the negative effect is too small to be statistically significantly different from zero. This indicates that there is no significant negative relation between the adoption of additional antitakeover defences and firm performance. The most plausible reason for this finding is that the Sarbanes-Oxley act influences the statistically found relation in the post-SOX period. Bhagat and Bolton (2009) find that the E-index did significantly affect performance in the pre-SOX period and this effect vanished in the post-SOX period. In line with the study of Bhagat and Bolton (2009) the coefficient of the E-index in my research, does report a positive and insignificant (p=0.64)

coefficient. This suggests that an increase in the score of the E-index does not lead to a decrease in firm performance. Since the SOX leads to more alignment between shareholders and managers, this would most likely have a mitigating manifestation on opportunistic behaviour.

Another possible explanation is that opportunistic behaviour increases incentives to perform well on the short-term, since managerial compensation is mostly based on short-term performance (Matolcsy and Wright, 2011). Since ROA reflects short-term performance, this might explain why I do not find a relation between ROA and both indices of takeover defences.

Table 7 reports the output of the fixed-effects panel data regression model with EPS as dependent variable. The within R-squared levels are 0.12 for all four models. The increase in F-statistic of both model 2 and 4 suggest that the models do improve after including the average industry EPS. The coefficient of the both the E-index (p=0.31) and the A-index (p=0.70) on EPS are positive and not statistically significant. Since the coefficients on of both the E-index and the A-index have positive coefficients, while coefficients were negative in the model with ROA as dependent variables, this suggests that the results are not consistent under different firm performance measures, and therefore it matters what benchmark is used to measure the performance.

ROA measures how the firm is able to generate return compared to its assets base, while EPS measures how much profit the firm generates per share. This insinuates that firms with relatively less antitakeover defences are able to generate a higher return on average relative to its assets base. However, when calculated per share, the relation between the two indices of takeover defences and performance is positive. One explanation for this is that firms that perform 'poorly' can execute share repurchase to 'improve' their EPS. Since EPS is a ratio, it can be improved by either increasing the nominator or decreasing the denominator. Therefore share repurchases can lead to an improvement of EPS while having a lower net income in a given year. Another, maybe even more plausible explanation, is that share repurchases can be used as an antitakeover defence itself (Ryngaert and Scholten, 2010). Since firms can use share repurchases as an antitakeover defence, it is likely that there is a relation between the number of share repurchases and the A-index and E-index respectively. This means there might be a negative relation between the A-index and the E-index on the one hand and the number of shares outstanding on the other hand, which is the denominator of EPS. This might

lead to the relation between EPS and both the A-index and the E-index having a positive coefficient.

I do not find a statistically significant relation between takeover defences and firm performance, this might suggest that the relation between takeover defences and firm performance found by previous literature is driven by omitted variables. To test whether this might be true, I perform a random-effects model with both the A-index and E-index as independent variables and firm performance as dependent variable.

Additional tests

Since this study uses fixed-effects panel data regression models, all omitted firm-specific factors are absorbed by the firm fixed-effect. Several studies argue that the negative relation between antitakeover defences and firm performance is driven by unobservable characteristics that are related to the incentive to implement one of the takeover defences (e.g. Bauwhede, 2009; Gompers et al., 2003; Masulis et al., 2009). To test whether the relation between antitakeover defences and firm performance might be driven by unobservable firm-specific factors I perform the same regression models, with random-effects. I use ROA as a proxy for firm performance. In the models with random-effects I do find a significantly negative relation between both the A-index and E-index on the one hand and firm performance on the other hand. Since the fixed-effects model does not show significant results this suggests the relation is driven by unobservable firm-specific factors.

Since correlation is no causation, after controlling for unobservable firm-specific factors there is no significant relation between takeover defences and firm performance after all. The agency theory itself provides a possible explanation for this. The agency theory assumes that managers want to maximize their own wealth. However, one manifestation of opportunistic behaviour is that managers focus on the short-term in order to maximize their own pay, since managerial compensation mostly relates to short-term performance measures. This increases incentives for managers to increase short-term performance of the firm. Therefore the negative effect of takeover defences on firm performance, caused by effort-aversion, might be mitigated by the incentive for managers to perform well on the short-term.

One way to improve short-term performance is earnings management. Earnings management is considered to be a way of opportunistic behaviour since managers ‘have to make their numbers’ in order to improve jobs security. In order to make number the manager can engage in earnings management. Since proxies of performance are derived from financial statements,

earnings management would affect the statistical relation between takeover defences and firm performance. Renders and Vandenbogaerde (2008) find that the implementation of takeover defences is positively related to the level of earnings management. I interpret this result as managers being able to engage in opportunistic behaviour when they implement relatively more takeover defences.

Another possible omitted factor is managerial incompetency. When managers are incompetent, indicating they lack the skills run the firm efficiently, it is plausible to assume they do not implement antitakeover defences wisely.

4.5.3 Results hypothesis 3

Table 8 provides the results of the regression equations with A-index and E-index as independent variable and Beta as dependent variable. Column 1 and 2 do provide results with the A-index as independent variable, and column 3 and 4 do provide results with the E-index as independent variable. Contrary to expectations, the coefficient of the A-index is positive, however the coefficient is not significant at the 10% level (p=0.13).

I do find the coefficient for the A-index to be positive and significant (p=0.05) after controlling for the yearly average industry Beta in column 2. This suggests that there is a significantly positive relation between the A-index and Beta. This finding insinuates that the riskiness of the firm, as perceived by the outside market, does depend on the score of the A-index.

Column 3 and 4 show that the E-index is positive and significant (p=0.05), which suggests that the E-index does positively relate to the riskiness of the firm. I interpret this finding as the equity market considering firms with a higher E-index more risky. To be more specific, when the score of the E-index increases by one unit, Beta increases on average with 0.04. However, the coefficient is rather small, it provides some evidence that investors perceive firms that implement one additional takeover defence more risky.

The most plausible explanation for the positive relation between the two indices for takeover defences and Beta arises from information asymmetry, as the implementation of antitakeover defences leads to less openness to the market for corporate control (Ferreira and Laux, 2007). Early studies argue that the weak corporate governance is associated with increased agency risk (e.g. Jensen and Meckling, 1976; Jensen, 1986). This agency risk arises from private information the manager has. When the manager has relatively much private information, this leads to an increase in information risk to the investor (Easley et al, 2002). When outside

Table 8

Regression results with Beta as dependent variable

	Predicted sign	(1)	(2)	(3)	(4)
Intercept	?	1.55***	0.06	1.52***	0.08
		(7.80)	(0.33)	(7.74)	(0.41)
A-index	(-)	0.02	0.03*		
		(1.54)	(1.95)		
E-index	(-)			0.04**	0.04*
				(1.96)	(1.79)
Leverage	(+)	0.32***	0.35***	0.32***	0.36***
		(2.98)	(3.26)	(2.97)	(3.39)
Ln(info)	(+)	0.08***	0.06**	0.08***	0.06**
		(3.13)	(2.56)	(3.13)	(2.42)
Dividends	(-)	0.02*	0.02**	0.02**	0.02**
		(1.74)	(2.11)	(1.76)	(2.21)
Industry Beta	(+)		1.05***		1.04***
			(28.75)		(28.52)
Firm fixed effects[a]		78.65***	52.19***	77.48***	49.55***
Year fixed effects[b]		62.88 ***	No	61.36***	No
Within R^2		0.04	0.09	0.04	0.09
Model F[c]		42.80***	172.98***	42.96***	172.67***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The table provides the regression coefficients of the regressions with Beta as dependent variable. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Leverage* is defined as total debt divided by total assets. *BTM* is defined as book value per share divided by market value per share. *Ln(size)* is the natural logarithm of total assets, and *Ln(info)* is the natural logarithm of the average bid-ask spread over a year. *Industry Beta* is the industry average value of Beta in a given year based on the two-digit SIC code. The table reports the coefficients of the fixed-effects regressions and z-statistics (in parentheses) based on robust standard-errors (Wooldridge, 2002). ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

[a] Table reports the Sargan-Hansen statistic following from the robust Hausman test
[b] Table reports the F-statistic of joint significance of fixed-effects
[c] Table reports the F-statistic of joint significance of all regressors

parties are able to effectively monitor managers, this risk can be mitigated (Garmaise and Lui, 2005). However, the implementation of antitakeover defences leads to outside parties being less able to effectively monitor management. This imposes additional risk on investor, and assuming investors are rational they want this risk to be priced. This leads to the firm being perceived more risky, resulting in an increase of Beta. A second argument for this finding is that the relation is driven by managers that are corrupt (Garmaise and Lui, 2005). They assert that when managers are corrupt, which is more likely when relatively more antitakeover defences are enacted, firms have higher exposure to systematic risk. Rationale behind this reasoning is that managers may make false reports to expropriate private benefit, thereby reducing the firm's cash flow. In order to be able expropriate private benefits, corrupt managers invest more in the short-term, which leads to short-term gains. When they are corrupt they will misreport the actual level of cash flows, which leads to a reduced value of cash flow that is disclosed to the public. In the case of ineffective outside monitoring of management, managers do have more space to act corruptly.

Another potential explanation for this result follows from 'shareholder rights'. In essence antitakeover defences decrease shareholder rights (Gompers et al., 2003). Therefore it is plausible to think that investors consider firms that restrict shareholder rights (by implementing additional takeover defences) more risky. Therefore one can assume that investors want this risk to be priced.

Interestingly, the coefficient of the E-index is higher than the coefficient of the A-index. This difference most likely follows from the fact that the A-index relies under the assumption that all takeover defences are equally effective in its adoption. Assuming investors are rational, they perceive firms with the 'key' antitakeover defences enacted more risky. Rationale behind that assertion is that the six takeover defences of which the E-index consists have a stronger ability to reduce openness to the market of corporate control, thereby increasing information risk. Alternatively, the takeover defences included in the E-index are considered to be more effective in decreasing shareholder rights (Bebchuk et al., 2009). This emphasizes the assertion that there is a difference between how several types of antitakeover defences are viewed in the equity market.

Garmaise and Lui (2005) test this theoretical prediction and find that the level of corruption (proxied by the TI Corruption Perceptions Index[2] and the GCR[3]) is positively associated with Beta. Cheng et al. (2006) and Chen et al. (2011) find evidence that firms with relatively more antitakeover defences have a higher cost of equity, suggesting that firms that implement more antitakeover defences are considered to be more risky by the equity market. In line with these findings Cremers and Nair (2006) and Cremers et al. (2009) argue that that the implementation of antitakeover defences leads to an increase in the firm's level of systematic risk.

Additional tests

I predicted a negative relation between takeover defences and firm risk, since managers that face few threats from the market for corporate control are more likely to behave more risk-aversely. Since I do not find evidence that the adoption of takeover defences decreases Beta, I conduct one additional analysis in which I test whether the adoption of takeover defences affects risk-taking behaviour. A widely used metric for risky behaviour is the leverage ratio, since adding more debt to the firm reflects managerial risk taking. I perform an additional test with Leverage as the dependent variable and the A-index as independent variable. I add BTM, ROA, Ln(size), and the average industry leverage ratio as control variables. Although the coefficient is significant (p=0.06) and negative, it has a value of 0.00 when rounded to two decimals. Therefore I interpret this finding as weak evidence that the adoption of takeover defences leads to risk-averse behaviour.

4.5.4 Findings on control variables

Hypothesis 1

In table 5 all control variables show negative coefficients in the regressions with Tobin's as dependent variable. For the variable BTM this logically follows from the fact that the Tobin's Q reflects the market value of the firm in relation to its book value, while BTM reflects the ratio of book value per share to market value per share. Since Ln(size) is the natural logarithm of the denominator of Tobin's Q, mathematically it makes sense that both are negatively

[2] The Transparency International (TI) Corruption Perceptions Index is an annually published index that is published by Transparency International. It creates a ranking of countries based on their perceived level of corruption of the public sector. The ranking is based on approximately ten surveys following from various sources (Garmaise and Lui, 2005).

[3] The Global Corruption Report (GCR) is a report that follows from experts in specific fields that assess the level of corruption of a particular industry (Garmaise and Lui, 2005). Each year's report addresses another specific industry.

related. The variable Ln(info) captures information asymmetry, which influences the agency conflict and therefore firm value. Leverage is negatively associated with Tobin's Q, since firms with higher Tobin's Q, which have relatively more investment opportunities, are more likely to be financed with equity.

Hypothesis 2

Column 1 and 2 of table 6 provides the output of the regression equations with ROA as dependent variable. I do find all control variables to have a negative and significant coefficient. For the variable Ln(info) and Ln(size) this is as expected, since agency conflicts are expected to be more present in larger firms and firms with relatively more information asymmetry. However, past literature predicts agency conflicts to be smaller at firms with relatively less growth opportunities, and firms whose capital structure contains relatively less debt, proxied by BTM and Leverage respectively (e.g. Aivazian et al., 2005; Dey, 2008). The negative sign for Leverage might follow from the explanation that firms with higher leverage ratios do face higher interest costs. Higher interest costs lead to a decrease in net income, and therefore a decrease in ROA. The negative sign of BTM can be explained from a growth opportunities point of view. Firms with higher BTM ratios face fewer investment opportunities, resulting in viewer opportunities to increase its profitability. In table 7, I do find similar results for the control variables in the regressions with EPS as independent variables, only difference being that Ln(size) positively affects EPS.

Hypothesis 3

Table 8 reports the output of the regression with Beta as dependent variable. As expected the coefficient of Leverage in the regression model with Beta as dependent variable has a positive sign, which logically follows from the reasoning that when the firm has relatively more debt in its capital structure it is perceived to be relatively more risky. Ln(info) logically increases the perceived riskiness of the firm since more information asymmetry increases the perceived riskiness by investors. The coefficient of Dividends, however, shows a positive sign, while I expected the sign to be negative. The most plausible argument for this finding is that managers of firms with relatively high Betas increase their dividends in order to reduce systematic risk.

4.6 Additional tests

4.6.1 Alternative takeover index

Cremers and Nair (2005) argue that the process of treating all takeover defences equally important leads to the construction of a noisy proxy. For instance adopting a Blank Check Preferred eases the ability to enact a Poison Pill since this can be done without shareholder approval. Therefore one can expect managers of firms with Blank Check Preferred enacted to adopt a Poison Pill whenever there is a threat of takeover that they want to prevent. In addition, Blank Check Preferred authorizes managers to issue new stock classes, thereby being able to create a dual class governance structure. The same argument gave rise to the creation of the E-index by Bebchuk et al. (2008). However, the disadvantage of those indices is that by creating an index with only a small group of takeover defences one ignores all other takeover defences, while these also may have an effect. Therefore I perform additional tests in which I reconstruct the A-index, using different weightings (AT-index). Several studies argue that not every takeover defence should be treated equally (Cremers and Nair, 2005; Bebchuk et al., 2009). I use the same method I used to construct the A-index , with only difference that I use different weightings (ω) for each takeover defence that is included in the E-index (Staggered Boards, Limits to Amend Bylaws, Limits to Amend Charter, Supermajority to Approve Mergers, Golden Parachutes, and Poison Pills). To be more specific, I add ω points for each takeover defence included in the E-index that a firm has implemented, for all other takeover defences I add 1 point to the score. This suggests that the score does increase relatively more after the implementation of one of the six defences incorporated in the E-index.

Table 11 in the appendix provides the output of firm value, firm performance, and firm risk regressed on the AT-index. Table 11 provides the results of the regressions in which the value for ω is 1.5. I find the AT-index to have a negative relation with Tobin's Q and a significant positive relation with Beta, while the relation between the AT-index and firm performance remains insignificant. My results are robust to the use of different weightings in the range from 1 to 2. Since there are no independent theories on how to choose plausible weightings, I consider this additional test an exploratory endeavour.

4.6.2 Robustness test

In this section I perform several robustness tests for each hypothesis.

Hypothesis 1

To test whether the results are robust under the use of different measures for firm value I repeat the regression using an alternative proxy for firm value. I refer to Smit et al. (2017) who use the sum of market value of equity and book value of total debt as proxy for firm value. To compress data I take the natural logarithm of this variable. Using this variable as proxy for risk, I find similar results.

Hypothesis 2

The results of hypothesis 2 show that the outcomes differ under the use of different proxies. Both proxies for performance are ratios, therefore the results might be driven by the denominator effect or the nominator effect. Therefore, as a robustness test I perform the regression with the natural logarithm of net income. Using the natural logarithm of net income as proxy for firm performance, similarly, I do not find significant results.

Hypothesis 3

I perform two additional analyses in which I use the daily Beta based on 252 trading days, and the weekly Beta based on 52 weeks. Using weekly or monthly stock return data to compute Beta reduces the standard error. I do find similar results for both measures.

4.7 Summary

Table 9 provides an overview of my theoretical predictions and the coefficient of interest in order to test the theoretical predictions. Table 9 also reports the corresponding p-value and whether I confirm or reject the hypothesis respectively. In short, I do find some evidence that there is a negative relation between the A-index and firm value. The result holds after including both firm-fixed effects and year-fixed effects, which suggests the result is not driven by firm-specific or time-specific factors. I also find that the result is robust under the use of different proxies for firm value. I do not find that the relation between takeover defences and firm value is driven by some 'key' takeover defences, since the E-index provides insignificant results.

I do not find significant statistical evidence that either the A-index or the E-index is related to firm performance. This most likely follows from the fact that the relation between takeover defences and firm performance is driven by firm-specific omitted variables. The most plausible unobservable firm-specific factor that affects both the implementation of takeover defences on the one hand and firm performance on the other hand is managerial

Table 9

Tests of the hypotheses

Hypothesis 1:				
There is a negative relation between the number takeover defences a firm has implemented and firm value				
DV: Tobin's Q	**Predicted sign**	**Coefficient**	**P-value**	**Result**
IV: A-index	(-)	-0.01	0.08	Confirm
IV: E-index	(-)	-0.01	0.47	Reject
Hypothesis 2:				
There is a negative relation between the number takeover defences a firm has implemented and firm performance				
DV: ROA	**Predicted sign**	**Coefficient**	**P-value**	**Result**
IV: A-index	(-)	-0.00	0.24	Reject
IV: E-index	(-)	0.00	0.64	Reject
DV: EPS				
IV: A-index	(-)	0.01	0.70	Reject
IV: E-index	(-)	0.04	0.31	Reject
Hypothesis 3:				
There is a negative relation between the number takeover defences a firm has implemented and firm risk				
DV: Beta	**Predicted sign**	**Coefficient**	**P-value**	**Result**
IV: A-index	(-)	0.03	0.05	Reject
IV: E-index	(-)	0.04	0.07	Reject

The table provides the predicted sign of the coefficients of interest, the coefficient and corresponding p-value and whether I confirm or reject the hypotheses. *DV* stands for dependent variable and *IV* stand for independent variable. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Tobin's Q* is defined as the market value of equity plus book value of preferred stock and debt divided by total assets. *ROA* is defined as net income divided by total assets. *EPS* is defined as net income divided by total assets. Beta is the 12 month monthly covariance of a particular stock with the market divided by the variance of the market.

incompetency. Manager incompetency is hardly impossible to measure, but since it is firm-specific the fixed-effect will capture variation caused by this omitted variable. At last, despite finding weak evidence that the implementation of takeover defences induces risk-averse behaviour, I do find that there is a positive relation between both the A-index and E-index and Beta. The most plausible reason is that this is because of information risk. The implementation of takeover defences leads to less openness to the market for corporate control, this increases the information asymmetry between managers and investors. However, I do find the coefficient for the E-index being stronger, which suggests that investors consider

firms with one additional takeover defence that is incorporated in the E-index relatively more risky since these defences are considered to be more effective in reducing openness to the market for corporate control. Since the A-index consists of all takeover defences, an increase in its score has on average less effect in reducing openness to the market for corporate control. I do find that my results are robust to the use of different proxies for firm value, firm performance and firm risk, and the inclusion of both firm-specific and year fixed-effects. At last, I find my results being robust to the use of an antitakeover defence index constructed using different weightings for each takeover defence.

5. Conclusion

5.1 Summary

Within management control the agency theory is a central theory that asserts that conflicts may arise since interests of investors and managers diverge. Investors are interested in the maximization of firm value, while managers want to maximize their own wealth. As a reason of that three potential conflicts may arise, since managers are expected to behave opportunistically, effort-aversely, and risk-aversely. Since managerial compensation is mostly based on short-term performance, managers do have incentives to perform well on the short-term while they ignore the long-term value of the firm. Thereby do managers not have incentives to provide additional effort or act risk-seeking on behalf of investors. The conflict is driven by both information asymmetry and goal incongruence. Both internal and external corporate governance mechanisms can deal with agency conflicts within firms. One external corporate governance mechanism is the market for corporate control, which has a disciplining function. The market for corporate control, often referred to as the takeover market, puts pressure on poor performing managers through the threat from hostile takeovers. Since poor performance results in the share price being hit, the firm becomes an attractive target. Hostile takeovers are the type of takeovers without management's approval with the aim of replacing inefficiently operating management. To mitigate the threats from takeovers, managers started to enact takeover defences, thereby minimizing the threats from the market for corporate control. This provides reason to believe that managers operating at firms with takeover defences enacted do have less incentives to run the firm efficiently. More specifically, the aim of this thesis was to find whether there is a relation between antitakeover defences and firm value. I do find a negative and significant relation between the A-index and firm value, and I do find this relation being robust under the use of different proxies for firm value. This suggests that managers operating at firms with relatively more takeover defences have room for opportunistic behaviour, leading to a decrease in firm value. In contrast with earlier work of Bebchuk et al. (2008) I do not find a significantly negative relation between the E-index, which consist of only six takeover defences, and firm value, suggesting the relation is not driven by the implementation of some key takeover defences. In summary, my main results suggest that that the implementation of takeover defences has a negative relation with the value of the firm.

Second, I hypothesized that the implementation of takeover defences is negatively related to firm performance, however I do not find significant results for either the A-index or the E-

index. Rationale behind this finding is that managers focus on short-term performance since this positively influences their compensation.

Third, I hypothesized that there is a negative relation between the implementation of takeover defences and firm risk. Although I do find weak evidence that the implementation of takeover defences associates with risk-averse behaviour, contrary to the theoretical predictions, I do find a significant and positive relation between both the A-index and E-index on the one hand and Beta on the other hand. A valid argument for these findings is the existence of information risk. As the implementation of additional takeover defences leads to a decrease in openness to the market of corporate control, the implementation leads to increased information risk. As rational investors want this risk to be priced, there might be a positive relation between Beta and antitakeover defences. A second argument follows from shareholder rights, since the implementation of takeover defences is considered to be restricting shareholder rights, investors perceive firms with relatively more takeover defences enacted more risky.

Concluding, I find a negative relation between the number of takeover defences a firm has implemented and the value of the firm. My findings suggest that investors do incorporate the strength of different takeover defences in order to determine the riskiness of the firm, while managers do not necessarily implement 'key' takeover defences in order to reduce threats from the market for corporate control. My results are robust to the inclusion of control variables, and the inclusion of both firm-specific and year fixed-effects. At last I find my results being robust to the use of several proxies of the dependent variables, and the use of an alternative takeover index that uses different weightings for each takeover defence to construct an score for the index.

5.2 Contribution

In this section I first describe how my research design adds to the existing body of literature. Second, I explain how my findings contribute to previous related studies.

5.2.1 Contribution of research

Past literature mainly relied on the G-index as proxy for the 'strength' of antitakeover protection. This thesis does add to the existing body of literature by using a new proxy for takeover protection (the A-index) that consists of fourteen takeover defences. This allows me to study the relation between an index of takeover defences for a more recent sample, while previous studies were restricted in their ability to choose a sample period since data on the G-

index is only available for a limited amount of years up to 2006. Studying the relation between takeover defences on the one hand and firm value and firm performance on the other hand for a more recent sample is relevant because of the Sarbanes-Oxley act, which was enacted in 2002. The aim of SOX was to improve alignment between shareholders and management. As a reason of that it is interesting to study whether SOX a negative relation between takeover protection and firm value holds for a sample nine years after the enactment of SOX.

Since previous studies that address the issue of takeover defences and firm value mostly relied on the indices created by either Gompers et al. (2003) or Bebchuk et al. (2008), to my knowledge there is a gap in literature since none of these studies used an index in which different weightings were used. Therefore I consider this a gap in literature which I address in my additional analyses by creating a proxy with different weightings for each takeover defence. However it is a challenge to choose a plausible weighting for the takeover defences, my findings are a building block for future research to construct proxies using different weightings for each takeover defence.

Also, my thesis adds to existing literature since the methodology reduces the endogeneity issues. Previous literature extensively made use of event studies, researching whether the announcement of a takeover defence affected stock returns. However, the announcement of a takeover defence might affect the stock price since it reflects private information from the managers. Investors might respond to private information becoming public, leading to a change in stock price. I aim to overcome this endogeneity issue using yearly data since I study the relation between takeover defences and the dependent variables over a longer time.

I also contribute to existing literature by directly testing the relation between takeover defences and Beta. Previous studies found a positive relation between takeover defences and the cost of debt and tested the relation between takeover defences and implied cost of capital (based on the internal rate of return), but never addressed the issue whether takeover defences are viewed favourably by the equity market.

5.2.2 Contribution of findings

Also, my findings contribute to the existing body of literature. To my knowledge this is the first study to conduct a related study using a sample after SOX. SOX was implemented in 2002, but since most studies take advantage of the index constructed by Gompers et al. (2003) they are restricted to use samples up to 2002. Using a sample that starts nine years after the

implementation of SOX, I show that the negative relation between takeover defences and firm value holds. Since the intention behind the adoption of SOX was improving alignment between investors and managers, this thesis shows there is still room for improvement. Therefore the result is interesting for policy makers, especially the ones involved in accepting SOX.

I do find that investors do consider firms with more takeover defences relatively more risky. This adds to the body of literature that tests the relation between takeover defences and the cost of capital. Cheng et al., 2006 and Chen et al., 2011 find a positive relation between takeover defences and implied cost of capital. On the other hand Klock et al. (2005) and Cremers et al. (2007) find a negative relation between takeover defences and the cost of debt. These findings suggest that takeover defences are viewed favourably by debtholders while equity investors consider firms with relatively higher takeover protection more risky. My findings also suggest that equity holders consider firms with more takeover protection more risky.

This thesis contributes to the vast amount of literature that addresses endogeneity problems in corporate governance. I show that the relation between antitakeover defences and firm value is driven by some unobservable firm-specific factors, after controlling for these firm-specific factors the relation disappears. This suggests that the relation found in some studies is not causal, and is most likely driven by other factors than just the implementation of takeover defences.

5.3 Limitations and implications for further research

The results of this study rely on several assumptions. First I assume that managers behave accordingly to the agency theory, assuming they act in self-interest. When managers do act on behalf of shareholders the interpretation of my results do change drastically. Thereby my conclusions are dependent of the assumption that the market for corporate control has a disciplining role over managers.

This thesis uses a sample consisting of firms listed at either NASDAQ or NYSE. These firms are most likely larger than average, which harms external validity. Also Beta might be flawed as a risk measure, since it is a regression coefficient itself, the error-in-variable bias might arise. Additionally, due to data availability the A-index only consists of fourteen takeover defences, which is relatively low in comparison to Gompers et al. (2003) who constructed an index using 24 takeover defences. I also cannot fully exclude simultaneity and dynamic

endogeneity. Additionally, fixed-effects greatly reduce the omitted variable bias, but it might be that some omitted variables exist that affect the within firm relation between both takeover defence indices and the dependent variables.

My unequal-weighting method to construct the AT-index had an explorative nature, since no independent theory exists that predicts weightings for each takeover defence, I suggest further literature to elaborate on constructing indices in which different weightings are used for each takeover defence, which to my knowledge, is a gap in literature.

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Appendix A: Tables

Table 10

Skewness and kurtosis of selected variables

Variable	Skewness	Kurtosis
A-index	-0.20	3.53
E-index	-0.39	3.53
Tobin's Q	0.96	2.67
ROA	0.23	2.11
EPS	0.45	2.17
Beta	0.10	2.01

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. The *A-index* is a score based on fourteen antitakeover defences. For twelve of these defences I add a number to the score if the firm adopted the particular antitakeover defences and for two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The *E-index* is a score based on six antitakeover defences. For these six antitakeover defences I add one point to the score if the firm adopted the particular antitakeover defences in a particular year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *Tobin's Q* is defined as the ratio of the market value of assets divided by the book value of assets. *EPS* is defined as net income divided by total common shares outstanding. *ROA* is defined as net income divided by total assets. *Beta* is the 12 month monthly covariance of a particular stock with the market divided by the variance of the market

Table 11

Regression results with Tobin's Q and Beta as dependent variable

	Predicted sign	(1)	(2)	(3)	(4)
Intercept	?	3.49***	2.93***	1.47***	-0.01
		(20.44)	(15.68)	(6.83)	(-0.03)
AT-index	(-)	-0.01*	-0.01	0.02*	0.02**
		(-1.66)	(-1.62)	(1.76)	(2.05)
Leverage	(-)	-0.39***	-0.39	0.32***	0.35***
		(-5.35)	(-5.26)	(2.98)	(3.29)
BTM	(-)	-1.58***	-1.56***		
		(-31.36)	(-30.60)		
Ln(size)	(-)	-0.20***	-0.21***		
		(-8.92)	(-9.00)		
Ln(info)	(-)	-0.12***	-0.12***	0.08***	0.06***
		(8.98)	(-8.99)	(3.13)	(2.53)
Dividends	(-)			0.02*	0.02**
				(1.75)	(2.13)
Industry Tobin's Q	(+)		0.36***		
			(8.35)		
Industry Beta					1.04***
					(28.71)
Firm fixed effects[a]		150.92***	117.96***	78.65***	52.19***
Year fixed effects[b]		59.57***	9.03***	62.80***	No
Within R^2		0.52	0.52	0.04	0.09
Model F[c]		39.16***	144.98***	42.86***	173.05***

Sample consists of 2,894 firms and includes 11,531 firm-year observations in the period 2011-2018. Data is retrieved from, Compustat/CRSP, Beta Suite, CRSP daily and Governance dataset from IRRC. Column 1 and 2 provide the regression coefficients of the regressions with Tobin's Q as dependent variable. Column 3 and 4 provide the regression coefficients of the regressions with Beta as dependent variable. The *AT-index* is a score based on fourteen antitakeover defences. For six of these defences I add 1 point to the score if the firm adopted the particular antitakeover defences. For the six antitakeover defences that are included in the E-index, I add 1.5 points to the score if the firm adopted the particular antitakeover defences in a particular year. For two antitakeover defences I deduct a point from the score if the firm adopted the particular index in a given year. The research design provides a description of which antitakeover defences are used to construct the particular indices. *BTM* is defined as book value per share divided by market value per share. *Ln(size)* is the natural logarithm of total assets, and *Ln(info)* is the natural logarithm of the average bid-ask spread over a year. *Leverage* is defined as total debt divided by total assets. *Dividends* is defined as cash dividends paid divided by total shares outstanding. *Industry Tobin's Q* is the industry average value of Tobin's Q in a given year based on the two-digit SIC code. *Industry Beta* is the industry average value of Beta in a given year based on the two-digit SIC code. The table reports the coefficients of the fixed-effects regressions and z-statistics (in parentheses) based on robust standard-errors (Wooldridge, 2002). ***,**,* indicate statistical significance at the 1%, 5%, and 10% respectively.

[a] Table reports the Sargan-Hansen statistic following from the robust Hausman test
[b] Table reports the F-statistic of joint significance of fixed-effects
[c] Table reports the F-statistic of joint significance of all regressors

Appendix B: Explanation of takeover defences

Below I provide brief descriptions of the fourteen takeover defences used in this thesis, provided by Gompers et al. (2003).

Blank Check Preferred is a type of stock that plays an important role in 'delaying' takeovers. It refers to a class of stocks the board of directors has authority determining for instance voting and dividends. However, the most important use of Blank Check Preferred is the ability to implement Poison Pills without shareholders' approval.

Classified Board also refers to a potential 'delay' strategy of a firm. Reason for the delay is the fact that only a part of the board are up for election each year, which makes it harder to replace the board in order to obtain control.

Confidential Voting refers to the situation in which is an independent third party counts proxy votes, with the consequence that management does not look at individual proxy cards. Under proxy voting a shareholder can vote on behalf of another shareholder that is not able to attend the meeting.

Cumulative Voting provides shareholders with the ability to concentrate their votes, each shareholder obtains one vote per share times the amount of directors elected. Under Cumulative Voting shareholders can place all their votes to one candidate, which benefits minority shareholders.

Fair Price provide limitations to the price range of bidders in two-tier offers. Goal of this takeover defence is to prevent shareholders to tender their shares, which is signing an agreement to sell all the owned shares. Mostly this takeover defence requires bidders to pay the highest price to all the target's shareholders, making a potential takeover less attractive.

Golden Parachutes provide managers (financial or nonfinancial) compensations whenever after resignation that follows from a change in control. This increases the potential costs of a takeover

Limit Ability to Amend ByLaws and Limit Ability to Amend Charter limit shareholders in their ability to amend Bylaws. One example is the ability of directors to amend bylaws or charters without shareholder's approval.

Limit Ability to Call Special Meeting limit shareholders in their ability to call special meetings by increasing the support that is required in order to call a special meeting. This

takeover defence is considered to have a delaying effect since bidders need to wait for the annual meeting in order to be able to replace management.

Limit Ability to Act by Written Consent are mostly used in combination with Limit Ability to Call Special Meeting, since the implementation of both can lead to severe delays of takeovers. Mostly they increase the majority threshold or require unanimity.

Majority Vote Requirement means that directors are elected only if they receive a majority of votes of shareholders that attend the meeting. This limits the ability of bidder to replace management.

Poison Pills are mostly activated after a triggered event, e.g. an investor that buys a certain percentage of the stock. A Poison Pill is a means with the aim to make the firm's stock less attractive to be acquired by potential investors. One example of the implementation involves current shareholder (apart from the potential acquirer) to buy additional shares at a price below market value whenever there is a threat of an acquirer potentially obtaining control.

Unequal Voting Rights offer both expansion and limitations to the voting rights of several shareholders. For instance time-phased voting provides shareholders that own the firm's stock for a long period additional votes, relative to shareholders that bought the stock recently.

Supermajority Votes are takeover defences that increase the voting requirement in order to approve a merger. Mostly the percentage of required votes is higher than the percentage of shareholders that attend the annual meeting.

Appendix C: Libby boxes