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Takeover Defenses and Firm Performance

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ABSTRACT

This thesis provides post-Sarbanes Oxley evidence regarding the effects of takeover defenses on firm performance. A "Takeover Defense Index" is constructed to proxy the level of takeover defenses for about 1112-1298 U.S. firms during 2007-2014. Having more takeover defense mechanisms is found to have a strong negative effect on firm performance, both in terms of value (as measured by Tobin's Q) and profitability (as measured by Return on Assets). Additionally, when focusing only on the more prominent takeover defenses (e.g. the poison pill and staggered board), a stronger negative effect is found than for the less prominent defenses. This evidence enhances prior research by using recent data and measuring the effects on firm profitability. The results support the managerial welfare hypothesis, as firms with entrenched managers perform worse than other firms.

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Part I: Introduction

In early 2017, the role of hostile takeovers as a form of external corporate governance has been highlighted by the attempted takeover of AkzoNobel by PPG. After AkzoNobel's management had turned down multiple offers and refused to meet with PPG, the latter opted not to pursue a hostile takeover. This decision was influenced by the ample takeover defenses Dutch firms such as AkzoNobel have at their disposal. Even though its shareholders would have perhaps preferred the takeover to be completed, AkzoNobel's management was empowered by takeover defenses to make this decision for them.

In this sense, anti-takeover provisions are a means to counteract external corporate governance, as they can shelter managers from the market of corporate control. Without the fear of hostile takeovers, conflicts of interest are exacerbated and managers are more prone to making suboptimal decisions. Another perspective is that takeover defenses enable managers to play hard to get during takeover negotiations, allowing them to increase bid premiums to the shareholders' benefit. Which of these two motivations is the main driver behind adopting takeover defenses has been debated in literature without any definitive answer. This study will provide additional empirical evidence accounting for 21st century developments.

Many studies regarding the effects of takeover defenses on firm performance use event-study methodology, analyzing stock returns after the announcement of a new defense (Bhagat & Romano, 2002). However, the relationships found in those studies might not be causal, since the announcement of a new defense might convey managerial expectations about impending takeover bids. Their mere adoption is also no guarantee for them being used during a takeover, as incumbent managers ultimately decide if a takeover is resolved in a friendly manner. In a review of event-studies on takeover defense adoption, Coates (2000) finds that announcement results were statistically mixed and economically weak. His evidence supports the notion that announcement returns are an inaccurate measure for studying the effects of takeover defenses.

To avoid these issues surrounding event-study methodology, instead of stock returns, this thesis will examine the general effects on firm performance over a longer period of time. Additionally, rather than individual defenses an index of defenses is used which measures

the degree to which a firm is defended against takeovers to study the effects of more defenses on firm performance. Most studies regarding takeover defenses use data from before the wave of legislation starting with the Sarbanes-Oxley Act of 2002. Soon after, as a result of cheap credit, the Sixth Merger Wave of 2003-2008 began (Bruner, 2004). This merger wave ended due to the 2008 credit crisis. As firms were vulnerable, managers may have predominantly adopted defenses to protect shareholders from cheap takeovers. These events are accounted for by using a study period from 2007-2014, which yields a different perspective from previous studies.

Comparing the results to older studies with similar methodologies, i.e. the effect of a level of defenses over a period of time, can provide new insights. One famous example of such a study is Gompers et al. (2003), who find that firms with strong shareholder rights, meaning limited takeover defenses, had higher stock returns and higher firm value as proxied by Tobin's Q. Similar results were found in Bebchuk and Cohen (2005), Cremers and Nair (2005), Bebchuk et al. (2005), and Brown and Caylor (2006). Based on these results, the assumption is made that takeover defenses have a negative impact on long-run firm performance. This leads to the following empirical research question:

Do firms with weak takeover defenses perform better than firms with strong takeover defenses?

The results of the regression analysis have multiple facets. Using a broad index of takeover defenses shows a significant negative relationship between more defenses and firm performance. Moreover, a stronger significant negative effect is found when examining the effect of what the current literature deems to be the most effective defenses. In contrast, an index of the remaining, less prominent defenses has a weaker negative effect than the broad index. These findings support the results of Bebchuk et al. (2005), and Brown and Caylor (2006), who find that a small number of defenses drive the negative effect found for broader indices. The combined results suggest that some defenses have an insignificant or ambiguous effect on firm performance, while a few potent defenses have a strong negative effect.

The results suggest that takeover defenses disrupt the functioning of the market for corporate control, as managers are not pressured to act in the interest of shareholders.

Whether managers have the intention of protecting themselves is unresolved, but the managerial entrenchment that results from takeover defense adoption protects them regardless of intentions. In this sense, it matters not why managers adopt takeover defenses, as shareholders cannot know their true motivations and managers may be replaced in the future, whilst the defenses stay in place. Nevertheless, takeover defenses can also be used to the advantage of shareholders. As the adoption of many takeovers requires shareholder approval, this group should be exceedingly cautious when voting on such matters.

This paper is structured as follows: Part II analyzes relevant existing literature on corporate governance, the market for corporate control, takeover defenses, the dominating hypotheses to explain managerial behavior when adopting takeover defenses, and the Sarbanes-Oxley Act. Part III describes the data source, the sample and methodology. Part IV shows the empirical results and provides discussion. Part V offers conclusions, mentions limitations and gives recommendations.

Part II: Literature review

2.1 Corporate governance

The OECD defines corporate governance as the procedures and processes according to which an organization is directed and controlled (OECD, 2004). One of the main objectives of corporate governance, and the one most relevant in the context of this study, is to deal with the principal agent-problem. This problem arises when an agent, in this case a manager, is hired to act on behalf of a principal, in this case the shareholders. This separation of ownership and control creates a dilemma, as the manager is motivated to act in his own best interest (Fama & Jensen, 1983). Managers make most important decisions for the firm, whilst shareholders bear the majority of the wealth effects of these decisions. These conflicts of interests can be mitigated through effective corporate governance.

Corporate governance systems can vary depending on the ownership structures of companies in a country. In the Anglo-American model described by Berle and Means (1932), ownership and control are separated and ownership is broadly dispersed. The problem with small shareholders is that it is economically inefficient for them to monitor management. Instead, small shareholders will attempt to free-ride on the monitoring efforts of other shareholders (Shleifer & Vishny, 1997). If there are no large shareholders, internal governance by shareholders is limited. To fill this governance vacuum, significant legal protection for investor rights allows even small shareholders to enforce their rights, creating corporate governance ex-post in court.

In contrast, corporate governance systems in continental Europe and Japan tend to rely more heavily on concentration of ownership. Large shareholders have the means and the incentive to monitor and pressure management, partly eliminating the agency problem (Shleifer & Vishny, 1986). In countries with poor shareholder protection, nearly all firms have controlling shareholders. The controlling shareholder can be either the state or a family, which also manages the firm it controls (La Porta et al., 1999). Since there is no separation of ownership and control, the agency problem is eliminated. However, the lack of corporate governance severely decreases external financing, since investors will fear expropriation.

2.2 The market for corporate control

External corporate governance mechanisms apply pressure from outside the firm. The most prominent of these is the market for corporate control or takeover market. The market for corporate control was first described by Manne (1965):

> "The lower the stock price, relative to what it could be with more efficient management, the more attractive the take-over becomes to those who believe that they can manage the company more efficiently."

To summarize, corporate control is the right to determine the management of corporate resources (Jensen & Ruback, 1983). Scharfstein (1988) goes further by arguing that the hostile takeovers only penalize shirking managers. When firm value is low due to external factors, of which an acquiring firm is aware, a takeover is improbable. However, when firm value is low yet the environment is favorable, the manager has likely shirked and the probability of a takeover is high. In contrast, Franks and Mayer (1996) find that targets of hostile bids did not perform worse than targets of friendly takeovers or non-merging firms. Their evidence suggests that hostile takeovers do not merely target firms which are managed inefficiently. Although the literature is inconclusive, it is generally believed that the market for corporate control performs a vital role in governing the actions of managers.

2.3 Takeover defenses

In the corporate governance systems described in section 2.1, hostile takeovers only play an important role in the Anglo-American model, as firms in other countries rely more on internal corporate governance (Armour & Skeel, 2006). For hostile takeovers to be effective, highly developed equity markets and low concentration of ownership are required. This is why the use of defenses to hostile takeovers originates in the United States. Colloquially called "shark repellents", takeover defenses and other restrictions of shareholder rights were introduced in the 1980s, as a response to the fourth merger wave (Bruner 2004). This wave of takeovers was a result of the junk bond market, allowing for hostile takeovers of even the largest public firms (Gompers et al., 2003).

Takeover defenses are all actions by managers to resist having their firms acquired (Ruback, 1987). Some defenses are preventive and are adopted before a takeover offer is made and others are reactive, being deployed whilst the firm is under siege. There are a great number

of different defenses, differing in effectiveness, shareholder approval and attention received in scientific literature. The defenses that have been attributed with the highest effectiveness are poison pills, anti-takeover amendments and dual-class recapitalizations.

The most severe defense is the poison pill, of which there are several variants. Generally, it is a preventive defense, put in place by a firm's board of directors to make the firm prohibitively hard to take over. If any shareholder should acquire more than a predetermined percentage of shares, the other shareholders gain the right to buy more shares at a discount, diluting the acquiring company's shares. However, the poison pill does need to be activated by management during a takeover, making it a reactive defense as well. This measure is so effective at deterring hostile takeovers, that it has never been deployed. Management merely threatening to do so has historically been enough to deter acquiring firms (Subramanian 2003).

Since poison pills can be adopted within hours, without shareholder vote, they can even be adopted after a hostile bid is launched (Subramanian, 2003). These "shadow pills", might explain why event-studies of pill adoption produce weak and inconsistent results, since adoption of the poison pill does not actually affect legal takeover vulnerability (Coates, 2000). Coates concludes that empirical evidence is indecisive and that event-studies should look at staggered boards and other defenses that produce meaningful announcement results upon adoption.

A second category of defense mechanisms are the widely used anti-takeover amendments. These are amendments designed to impede an acquiring firm in gaining control of the target firm (Linn & McConnell, 1982). They can be subdivided in amendments to a firm's corporate charter and to its bylaws with the most notable amendment being the implementation of a staggered board (DeAngelo & Rice, 1983). A staggered board means that the board of directors is divided into groups, with only one group elected each year. This delays the effective transfer of control to the acquiring firm, even after it acquires the necessary shares to elect the board.

A third highly effective, yet controversial takeover defense is the dual-class recapitalization. This is a specific type of change in a firm's capital structure. The firm issues a second class of common stock, resulting in two classes of common stock with disparate voting rights (Jarrell

& Poulsen, 1987). This generally leads to managers expanding their control of the firm. They exchange their normal stock for the new stock with higher voting rights, or a variant of this scheme with the same result. Potential acquiring firms are thus not able to obtain a controlling share without purchasing the shares owned by management. Firms with this defense have been excluded from the analysis of this study. Since they differ greatly from firms with a single class of stock in terms of voting and ownership, the two types of firm are difficult to compare.

Statistics of the incidence of the takeover defenses described above, as well as others that are included in this study, are listed in table 1 of part III. Although this table does not include such statistics for the dual-class recapitalization, as this defense has been excluded, prevalence of this defense throughout the study period was stable at roughly 6.2% of sample firms. As the description of the sample will explain, these are statistics for U.S. firms only. As ownership and governance structures vary across countries, incidence of takeover defenses is likely to differ as well.

2.4 Shareholder welfare hypothesis vs managerial welfare hypothesis

Whether or not the market for corporate control can function properly depends highly on managerial resistance to takeovers (Hoffmeister & Dyl, 1981). Availability of takeover defenses partly determines the severity of this resistance, but ultimately the target firm's management decides whether to use the reactive defenses at its disposal. There are two common hypotheses to explain managerial reaction to a takeover:

- The shareholder welfare (or bargaining power) hypothesis, which states that management will act in its shareholders' best interests (Cary, 1969) and (Williamson, 1975). This hypothesis does not exclude the deployment of takeover defenses, if the bid price is too low. Proponents of this hypothesis generally argue that managers will only adopt and activate takeover defenses in order to increase the bid premium and only deny takeover bids that are truly not in the best interests of shareholders.

- The managerial welfare (or managerial entrenchment) hypothesis, according to which management will prioritize its own welfare above shareholder value maximization (Grossman & Hart, 1980). Managers could adopt takeover defenses to shield themselves from the market for corporate control. The conflict of interests

with the shareholders is likely to be greater, if the target firm's managers fear a loss in compensation with a new employer (Walkling & Long, 1982).

To observe which of these hypotheses dominates managerial behavior with regards to the adoption of takeover defenses, one can apply various methodologies. Firstly, one can examine the abnormal announcement returns when a firm announces to adopt a takeover defense. In the case of the adoption of anti-takeover amendments, Linn and McConnell (1982) find a correlation with an increase in stock prices, although the results were not unambiguous. DeAngelo and Rice (1983) find a negative price impact that is not significantly different from zero. Based on these results, anti-takeover amendments do not seem to have a significant effect on stock prices.

Partch (1987) finds a nonnegative stock price response to the announcement of dual-class recapitalizations in her sample from 1962-1984. In contrast, Jarrell and Poulsen (1987) find a significant negative price effect in their sample from 1976-1987. Jarrell and Poulsen argue that the divergence of these results can be explained by the motivations behind the recapitalizations. Most recapitalizations in the 1980s were initiated in response to the prominence of takeovers in that period. By subdividing their sample, they find that the more recent observations had the most negative returns. This suggests that when a firm announces a dual-class recapitalization as takeover defense, the abnormal stock returns surrounding the announcement are negative.

A second method for measuring the effect of takeover defenses on a firm is examining whether deal premiums in takeovers are greater for target firms with takeover defenses. The studies done regarding the announcement results of poison pills show indecisive results and suffer from a multitude of methodological problems (Coates, 2000). By using the deal premium methodology instead, Coates finds that the adoption of poison pills correlates with the size of deal premiums, supporting the shareholder welfare hypothesis.

A third way of examining the effect of takeover defenses on a firm is by measuring the announcement results of acquiring firms with varying degrees of takeover defenses. Masulis et al. (2007) find that acquiring firms with more takeover defenses had lower announcement returns for their own stock when they announced that they were going to acquire another firm. These results indicate that managers of acquiring firms with strong takeover defenses

make acquisitions that generate less value than managers of poorly defended firms. This evidence also supports the more specific argument made by Jensen (1986) that such wasteful managerial behavior is especially present in firms with large free cash flows. Masulis et al. hypothesize that without the restraints of the market for corporate control and given the means to do so, managers are more likely to make suboptimal, or in the worst cases, even value-destroying decisions.

A more theoretical perspective is offered by Subramanian (2003), who argues that the U.S. courts have given corporate boards such strong defenses that hostile takeovers are dead on arrival, rendering the market for corporate control ineffective. Indeed, adopting defenses that effectively grant incumbent managers the power to veto hostile takeovers is harmful to the firm (Ruback, 1987). However, it is unlikely that all managers only use this power in their own best interest, as doing so would hurt their future job opportunities. It would be ideal for shareholders if managers only vetoed a takeover if it were in the shareholders' best interest. Even so, if a tender offer is indeed too low, informed shareholders could simply reject it themselves. Assuming shareholders are capable of discerning between good and bad offers, there are no grounds for the existence of severe takeover defenses that support the shareholder welfare hypothesis.

Studying IPO firms could provide an additional perspective on managerial motivations when adopting takeover defenses. Managerial ownership in these firms is generally higher than in publicly listed firms and these IPO firms are about to be exposed to the market for corporate control. Assuming that the adoption of takeover defenses influences firm value, IPO managers face a trade-off between remaining in control and a higher wealth gain through firm value. In favor of the shareholder welfare hypothesis, Zingales (1995) and Mello and Parsons (1998) argue that the IPO of a firm is the first step towards its eventual sale. According to them, IPO managers adopt takeover defenses to facilitate the future sale of the firm and increase the expected takeover premium. A potential lower IPO price would be compensated through a higher deal premium when the firm is eventually taken over.

In contrast, Field and Karpoff (2002) find that the presence of takeover defenses when a firm goes public is negatively related to the subsequent acquisition likelihood and unrelated to the takeover premium for those firms that are acquired afterwards. These results are in

accordance with Brennan and Franks (1997), who argue that defenses are adopted pre-IPO in order for management to remain in control. Additionally, Brennan and Franks find that owners use underpricing to discriminate between applicants and reduce block size of new shareholdings. Their evidence contradicts the argument made by Zingales (1995) and Mello and Persons (1998), because it indicates that IPO managers do not want to relinquish control.

Furthermore, Field and Karpoff find that IPO managers are more likely to adopt defenses when their compensation is high, managerial ownership is low and monitoring by non-managerial shareholders is weak. These findings suggest that takeover defenses seem particularly compelling to well compensated IPO managers whose dominant objective is job security. In addition to adopting takeover defenses, Walkling and Long (1984) and other authors find a positive correlation between managerial compensation and takeover bid resistance. The findings of IPO-related studies generally seem to support the managerial welfare hypothesis.

To summarize, when comparing studies with various methodologies, most evidence seems to support the managerial welfare hypothesis, though the results are far from conclusive.

2.5 Recent developments and hypotheses

The collapse of the Dot-com bubble and scandals such as the ones involving Enron and WorldCom led to the enactment of the Sarbanes-Oxley Act of 2002. The act aims to establish responsibility of senior executives and remove conflicts of interest for management, auditors and securities analysts. Sarbanes-Oxley and the subsequent enactment of similar regulations in other countries have marked the beginning of a new era for corporate governance.

Since corporate responsibility is more heavily enforced due to these new laws, internal corporate governance is now playing a larger role in U.S. firms. These developments are likely to have mitigated conflicts of interests between managers and shareholders. As external corporate governance plays a relatively smaller role, managers are more likely to have adopted takeover defenses on grounds of the shareholder welfare hypothesis. Another event which has influenced the rationale behind defense adoption is the financial crisis of 2008. As is shown in table 2b of part III, 2009 saw a surge in the adoption of takeover defenses as a result of this crisis. This surge could be the result managers protecting

shareholders from takeovers with low tender offers or managers securing their employment during the crisis. The scarcity of credit during this period supports the latter.

So far, the effects of these events have largely been unaccounted for in studies on the effects of takeover defenses. However, these events may have significantly changed the motivations for managers to adopt takeover defenses. If takeover defenses are being adopted for other reasons than in the past and the way they are used has also evolved, the effects on performance are likely to have changed. Therefore, this study will provide additional evidence on these effects, using a relatively recent sample period of 2007-2014, which includes the effects of the aforementioned events. Many previous studies, which will be used to compare the results of this study in the next sections, have used data from the IRRC database. This database is a precursor of the ISS database used in this study. As significant changes have been implemented in this new database, new insights can be obtained by examining the more recent data.

The methodology of this thesis is focused on the long term effects of a higher index level of takeover defenses on firm performance. This methodology has been derived from Gompers et al. (2003), who created an index of 24 governance provisions (Gindex) with a one point per provision methodology. They found that higher levels of this index have a statistically negative significant effect on firm value and stock returns. Related studies regressing Tobin's Q on broad indices are Bebchuk and Cohen (2005) and Cremers and Nair (2005), who find similar results. These findings lead to the following hypothesis:

Hypothesis 1: Takeover defenses have a negative effect on firm value.

As opposed to measuring stock returns, this study will examine firm profitability as a measure of firm performance. The effects on Return on Assets are used as a measure of determining the effects on profitability, leading to the following hypothesis:

Hypothesis 2: Takeover defenses have a negative effect on firm profitability.

Other studies have since replicated the Gindex methodology and tried to refine it by narrowing the Gindex down to the defenses that drive most of its negative effect. Bebchuk et al. 2005) created their entrenchment index, containing only 25% of the provisions of the Gindex. Brown and Caylor (2006) used an index of 6 provisions, including only 14% of the

Gindex, but retaining most of the explanatory power of the Gindex. Their evidence suggests that certain more prominent defenses have a stronger effect than others, which would be a flaw for the Gindex methodology of one point per defense. This study will provide additional evidence on this subject by testing the following two hypotheses:

Hypothesis 3: More prominent takeover defenses have a stronger negative effect on firm value than other takeover defenses.

Hypothesis 4: More prominent takeover defenses have a stronger negative effect on firm profitability than other takeover defenses.

Part III: Data and methodology

3.1 Data Sources

All databases used are accessed through the research platform Wharton Research Data Services (WRDS). The databases accessed through WRDS are ISS, CRSP and Compustat. The sample contains data from U.S. firms in the period 2007-2014. The choice for the U.S. is due to its developed market for corporate control and data availability. The year 2007 is chosen as the first year, because it marks the beginning of the ISS database. This selection purposefully includes the financial crisis, the resulting bear market and the subsequent bull market to account for the effects of recent events.

Data on takeover defenses and other corporate governance provision data for U.S. firms is obtained from the Institutional Shareholder Services (ISS) (formerly known both as RiskMetrics and IRRC) database. ISS is the largest proxy advisory firm in the United States, advising and voting for shares of hedge funds, mutual funds and similar organizations. The database is split in two periods; pre-2007 and post-2007. The pre-2007 part was maintained by the IRRC and updated mostly biannually, whilst the post-2007 part has been updated annually by ISS. For this research only the post-2007 part of this database is used. Significant changes were made to the data collection process of the ISS database from 2007 onwards. As many variables have been dropped and added, the methodologies used in earlier studies cannot be applied to more recent data. Therefore this study will create a Takeover Defense Index (TDI) and two sub-indices based on the variables currently available in the ISS database.

Firm age data are derived from stock price data acquired from the Center for Research in Security Prices (CRSP) database. Their database contains American end-of-day and month-end prices on all listed NYSE, AMEX and NASDAQ common stock and basic market indices. In line with other studies, the first instance of stock price data in the CRSP database is used as an indication of a firm being publicly listed.

Company financial variables are obtained from Compustat North America, which consists of quarterly and annual reports such as balance statements, income statements and statements of cash flows and income of American and Canadian companies. The financial

data required to construct the dependent variables Tobin's Q and ROA as well as the data for the control variables have been obtained through this database.

3.2 The sample

The data obtained from these databases have been combined to create one dataset, via CUSIP codes, which identify North American financial securities. Firms for which no CUSIP code was available have been removed. In line with existing literature (e.g. Gompers et al. (2003), firms with a dual class common stock (in this sample 6.2% on average) have been excluded, because the voting and ownership differences are too great to make meaningful comparisons to single-class firms. This resulted in an initial sample of 1330-1419 firms depending on the year. This section will continue by describing the dependent, independent and control variables used.

The dependent variables are Tobin's Q and Return on Assets (ROA). Tobin's Q is used as a proxy for firm value, in line with similar studies such as Gompers et al. (2003) and Bebchuk and Cohen (2005). ROA is selected as a reasonable proxy for firm profitability, based on Dess & Robinson (1984), and Barber & Lyon (1996). Both Tobin's Q and ROA are reliable performance measures, as they directly and indirectly determine shareholder returns.

Tobin's Q, made famous by Tobin (1969), can be defined as the ratio of the market value of assets to the book value of assets. Several definitions of Q are used, with varying complexity. For this study the market value of assets is defined as the book value of assets plus the market value of common stock less the sum of book value of common stock and balance sheet deferred taxes. This definition of Q is in line with similar studies such as Bebchuk et al. (2005) and more sophisticated Q's have high correlation with this relatively simple Q (Chung and Pruitt, 1994).

This study defines ROA as Earnings Before Interest and Taxes (EBIT) divided by Total Assets. ROA was selected instead of the more widely used Return on Equity (ROE), because ROE does not account for leveraging by firms to achieve returns. In addition, ROA is found to provide more powerful test statistics than cash-based performance measures (Barber and Lyon, 1996).

The independent variables are the TDI and its two sub-indices. In order to create the TDI, the takeover defense variables in the dataset need to be binomial. Since certain variables from ISS are present in two forms, such as *Vote % Required to Amend Charter* and *Limit Ability to Amend Charter*, only the latter, binomial variant is included as including both forms would cause multicollinearity. The choice for binomial instead of numerical variables sacrifices precision for the ability to make an index.

The TDI contains 14 takeover defenses, divided into two categories. The first category is named Primary Defenses, containing the most effective defenses based on literature, as discussed in section 2.3. Although the literature is not entirely in agreement on the relative effectiveness of defensive provisions, the primary defenses category consists of: *Poison Pill, Staggered Board, Limits to Amend Bylaws* and *Limits to Amend Charter.*

The second category is named Other Defenses and contains all other defenses. These defenses include limitations to shareholders' rights, such as *Limitations to Call a Special Meeting* and *Limitations to Act by Written Consent*. This category also contains provisions which can alter shareholders' voting power, such as *Cumulative Voting*, *(Super)majority requirements* and *Unequal Voting Rights*. The Other Defenses category also includes provisions that directly increase the costs of the takeover for an acquiring firm, such as *Blank Check Preferred Stock*, *Fair Price* and *Golden Parachutes*. When referring to the Primary and Other categories as independent variables in regressions, they will be referred to as the Primary Defense Index (PDI) and Other Defense Index (ODI) respectively. Descriptions of the 14 provisions included in the indices are provided by Appendix A.

In order to construct the TDI, each firm is assigned one point for each of the 14 defenses in the combined PDI and ODI the firm has, resulting in an index level of 0-14. The PDI and ODI defenses are also counted for both these sub-indices separately, resulting in index levels of 0-4 and 0-10 respectively.[1] The distribution of the TDI index levels is shown by table 2a.

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[1] The author recognizes that assigning one point for each adopted takeover defense is a crude way to measure the degree to which a firm is defended. However, considering the use of similar methodologies in related studies and the scope of this study, using unweighted indices is the most practical way to measure the effects of a combination of takeover defenses on the performance of a firm. Part V provides recommendations regarding this limitation.

The control variables comprise standard financial controls, such as *Log of Assets* and *Log of Age,* as Total Assets and Firm Age have been suggested to affect both firm performance and takeover defense adoption (Shin & Stulz, 2000) and (Field & Karpoff, 2002). Furthermore, a number of controls have been selected based on studies regressing Tobin's Q on takeover defenses.. Prior evidence suggests that *Book/Market*, *Capital Expenditures (CAPEX)/Assets*, *Leverage* and *R&D/Sales* affect both firm performance and takeover defense adoption (Shin & Stulz, 1998; Gompers et al., 2003; Bebchuk et al., 2005).

A notable control is the dummy variable indicating whether or not a firm is incorporated in the state of Delaware, coded 1 and 0 respectively. Over 50% of publicly traded U.S. firms are incorporated in Delaware, due to its flexible business formation statute and business-friendly legal climate. This dummy is included because previous evidence suggests that firms use state anti-takeover laws as a substitute for takeover defenses (Karpoff & Malatesta, 1989). Lastly, year dummies are used to account for time varying controls.

Firms for which control variable data were not available have been excluded from the sample, which has likely not resulted in sampling bias. The final sample contains 1112-1298 firms. This variation is caused by firms going bankrupt, merging and firms leaving the S&P1500 and therefore the database. The statistical methods used to deal with this varying sample size are described in section 3.4.

3.3 Summary statistics

Table 1 displays the incidence of the 14 TDI provisions. Table 2a and 2b show the summary statistics of the TDI as a whole over the years, both in terms of distribution and descriptive statistics. Tables 2c, 2d, 2e and 2f can be found in Appendix B, providing the same statistics for the PDI and ODI. Table 3 offers descriptive statistics for the dependent and control variables. Descriptions for for all variables used are provided by Appendix C.

Table 1 shows that of the primary defenses, the infamous poison and staggered board have seen a decline in their incidence. In the case of the poison pill, the figure is perhaps misleading, as a poison pill can be adopted when necessary, as discussed in part II. One likely explanation for both decreases is shareholder pressure, as studies have suggested that these provisions render hostile takeovers prohibitively expensive. Limitations to the amending of bylaws and the charter have high rates of adoption and are relatively stable.

The incidence of most other defenses has been stable over time, with a few notable exceptions. Golden parachutes are increasingly prominent, as they have started to become one of the staples of remuneration packages. The incidence of supermajority provisions has declined in recent years, whilst the requirement of a majority for the election of directors has seen a steadily climbing incidence.

Table 1: Incidence of Takeover Defenses

This table describes the percentage of firms that possessed a certain takeover defense for every year in the study period. The takeover defenses are listed under the categories to which they belong. These categories form the sub-indices PDI and ODI, whilst all listed defenses combined form the TDI.

	YEAR							
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Primary defenses:								
Poison Pill	39.4%	35.1%	26.8%	21.1%	17.1%	13.9%	11.2%	10.5%
Staggered Board	55.0%	53.7%	51.6%	49.9%	45.8%	43.3%	40.8%	37.4%
Limits to Amend Bylaws	85.6%	86.8%	88.1%	88.4%	88.9%	89.1%	89.1%	88.6%
Limits to Amend Charter	87.3%	89.8%	90.6%	91.6%	92.2%	94.8%	95.5%	97.3%
Other defenses:								
Blank Check Preferred	92.3%	91.8%	91.9%	92.2%	93.4%	93.6%	93.8%	93.3%
Confidential Voting	11.7%	11.9%	13.9%	13.6%	12.7%	12.5%	12.4%	12.2%
Cumulative Voting	8.2%	7.7%	7.7%	7.0%	6.1%	6.1%	5.8%	5.4%
Fair Price	12.7%	13.5%	15.5%	16.6%	13.6%	13.2%	12.7%	12.8%
Golden Parachutes	52.9%	33.7%	80.2%	82.7%	82.9%	82.6%	83.1%	83.4%
Limits to Call Special Meeting	45.1%	45.4%	46.1%	47.1%	48.7%	49.4%	53.2%	54.4%
Limits to Act by Written Consent	42.5%	42.3%	41.5%	45.0%	59.2%	59.0%	58.9%	59.8%
Majority Vote Director Election	0.0%	26.5%	33.1%	36.3%	41.2%	46.8%	50.4%	55.6%
Supermajority Merger Approval	33.3%	31.5%	29.6%	30.4%	37.1%	32.8%	21.3%	18.9%
Unequal Voting Rights	0.5%	0.6%	0.5%	0.6%	0.6%	1.5%	2.5%	2.3%
Number of firms	1112	1155	1189	1237	1237	1262	1279	1298

Table 2 describes an upward trend for the TDI during the study period, with levels stabilizing in recent years. The most significant increase in TDI levels occurred in 2009. A possible explanation is that firms attempted to mitigate their increased vulnerability, caused by the economic crisis. Interestingly, the standard deviation has decreased over time, perhaps

indicating that firms are gravitating towards an optimum through the forces of the market. Roughly half the firms had a TDI level of 5 or lower with similar distributions on both sides of the mean. Extreme values are rare, with nearly no incidence at the 0, 1, 2, 11, 12, 13, 14 levels. It is important to note that the 14 provisions accounted for in the TDI are by no means an exclusive list of all defenses available. Similar statistics for the PDI and ODI are provided by Appendix B.

Table 2: Distribution and Descriptive Statistics of the TDI

Table 2a: Distribution of the TDI

This table provides the percentage of firms at every TDI level and for every year throughout the study period.

	YEAR							
TDI Level	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
0	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
1	0.6%	0.3%	0.3%	0.2%	0.1%	0.1%	0.2%	0.2%
2	1.6%	1.2%	0.5%	0.6%	0.5%	0.4%	0.3%	0.2%
3	6.2%	6.8%	2.8%	1.8%	1.5%	1.2%	1.2%	0.7%
4	13.5%	14.9%	9.1%	9.0%	7.0%	6.9%	7.1%	6.5%
5	24.6%	24.2%	21.7%	21.3%	20.0%	19.8%	19.9%	21.0%
6	23.9%	22.3%	25.5%	25.5%	24.4%	26.1%	27.6%	26.9%
7	17.3%	15.8%	20.8%	21.5%	23.5%	23.6%	23.9%	25.9%
8	8.6%	9.1%	11.7%	12.8%	14.3%	14.0%	14.5%	13.5%
9	2.3%	4.3%	5.9%	5.5%	6.5%	6.2%	3.7%	3.7%
10	1.1%	0.9%	1.5%	1.6%	1.9%	1.4%	1.5%	1.5%
11	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.1%	0.0%
12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	100%	100%	100%	100%	100%	100%	100%	100%

This table provides descriptive statistics of the takeover defense index levels for every year throughout the study period.

Year	N	Min.	Mean	Max.	Std. Dev.	Median
2007	1112	0	5.67	11	1.62	6
2008	1155	0	5.70	11	1.66	6
2009	1189	0	6.17	11	1.58	6
2010	1237	1	6.22	11	1.54	6
2011	1237	1	6.40	11	1.53	6
2012	1262	1	6.38	11	1.47	6
2013	1279	1	6.31	11	1.41	6
2014	1298	1	6.32	10	1.37	6

Descriptive statistics for the dependent and control variables can be found in table 3. The performance measures can vary significantly between firms and the control variables show that the sample contains a wide variety of firms. The mean of the Delaware Incorporation dummy indicates that 58.5% of the sample firms is incorporated in Delaware. The means, minima and maxima listed below are similar to those of comparable studies.

Table 3: Descriptive Statistics of Dependent and Control Variables

This table provides descriptive statistics for the dependent variables Tobin's Q and ROA and the control variables used in the regressions. All monetarily measured variables are measured in millions of United States dollars. The natural logarithms of the variables *Assets* and *Age* are used for the regression analysis.

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Tobin's Q	9769	1.76	1.09	0.45	14.21
ROA	9769	0.09	0.10	-2.76	1.18
Assets	9769	20601.9	114798.3	44.3	2573126.0
Age	9769	103.9	55.5	5.0	220.0
Book/Market	9769	1.87	4.17	-1.38	140.11
CAPEX/Assets	9769	0.04	0.05	-0.00	0.56
Leverage	9769	0.31	0.77	0.00	24.61
R&D/Sales	9769	0.04	0.28	0.00	17.48
Delaware Incorporation	9769	0.59	0.49	0.00	1.00

3.4 Methodology

To study the effects of different levels of takeover defenses, ten pooled ordinary least squares (OLS) regressions are performed to measure firm performance in terms of both firm value and profitability. The choice of pooled OLS in favor of fixed- or random effects models is based on the limited number of eight years with a varying composition of firms per year. As firms merge, go bankrupt, or are otherwise removed from the S&P 1500 and thus from the sample, individual firms are not observed across all years. To summarize, the sample does not contain longitudinal data. The observations from different time periods are pooled together and the resulting pooled sample is used for pooled OLS regressions. To correct for potential time-varying effects included in pooled OLS, year dummies are included in most regressions.

To test hypothesis 1, which concerns the effect of takeover defenses on firm value, Tobin's Q is regressed on the TDI and the control variables described previously. The same model is used to test hypothesis 2, but with ROA as its dependent variable to examine profitability. To test hypothesis 3, Tobin's Q is regressed against PDI and the control variables. This regression is repeated with ODI instead of PDI and the coefficients are compared. The same methodology is used to test hypothesis 4, but with ROA as the dependent variable. The results of the ten regressions are presented and discussed in part IV. All regressions use White (1980) standard errors to deal with potential heteroscedasticity.

Table 4 provides a correlation table for all variables used. The reasonably high correlation of 0.54 between the two dependent variables is expected, but is not excessively high. Correlations between TDI and the sub-indices are high, as the sub-indices are included in the TDI. Multicollinearity, however, is not an issue, as the TDI is not regressed along with one of its sub-indices. The other correlations do not exceed 0.3, indicating that multicollinearity is not present. All takeover indices are negatively correlated with both measures of firm performance, as suggested by existing literature. Less expected is the insignificant correlation of the PDI with Tobin's Q, suggesting the primary defenses do not account for the majority of the negative effect of the TDI. Correlations between control variables and both dependent and independent variables are mostly significant. This attests the selection of control variables, as removing them would create endogeneity through omitted variable bias.

Table 4: Correlation table

This table presents the correlations between the dependent, independent and control variables. For descriptions of these variables, consult Appendix C.

	Tobin's Q	ROA	TDI	PDI	ODI	Log(Assets)	Log(Age)	B/M	CAPEX/ Assets	Leverage	R&D/ Sales	Delaware Inc.
Tobin's Q	1											
ROA	0.540***	1										
TDI	-0.109***	-0.071***	1									
PDI	-0.014	-0.039***	0.447***	1								
ODI	-0.113***	-0.056***	0.845***	-0.101***	1							
Log(Assets)	-0.260***	-0.113***	0.189***	-0.146***	0.298***	1						
Log(Age)	-0.073***	0.007	0.157***	-0.005	0.178***	0.209***	1					
B/M	-0.247***	-0.237***	0.040***	-0.031**	0.063***	0.314***	-0.015	1				
CAPEX/Assets	0.066***	0.121***	-0.021*	0.020*	-0.035***	-0.060***	-0.016	-0.161***	1			
Leverage	-0.189***	-0.170***	-0.027**	-0.045***	-0.004	0.143***	-0.016	0.165***	-0.016	1		
R&D/Sales	0.147***	-0.198***	-0.016	0.026**	-0.033**	-0.093***	-0.018	-0.044***	-0.044***	-0.036***	1	
Delaware Inc.	0.094***	0.047***	-0.200***	0.143***	-0.308***	-0.032**	-0.156***	-0.049***	0.051***	0.004	0.052***	1

*. Pearson correlation is significant at the 0.05 level

**. Pearson correlation is significant at the 0.01 level

***. Pearson correlation is significant at the 0.001 level

Part IV: Results and discussion

This part will present the empirical results of the regressions that have been performed. Models 1-4 concern the effect of the TDI on firm value as measured by Tobin's Q and on firm profitability as measured by ROA. Models 5-10 compare the effects of the PDI and ODI in order to determine if more prominent takeover defenses have a stronger negative effect on firm performance. These models also use Tobin's Q and ROA as their dependent variables.

4.1 The effect of the Takeover Defense Index on firm performance

The results of the first regressions are displayed in table 5. Models 1 and 2 are used to test hypothesis 1, which states that takeover defenses have a negative effect on firm value, as measured by Tobin's Q. Both models use the same variables, only differing in the addition of year dummies for model 2. As the table shows, higher levels of TDI are associated with a lower firm value in both models. Both coefficients are significant at the 1% level, indicating that a higher TDI level does significantly lower firm value.

The recorded negative effect is in accordance with existing literature; see for example Gompers et al. (2003), Brown and Caylor (2006) and Bebchuk et al. (2005). When comparing the results, the enactment of the Sarbanes-Oxley Act does not seem to have significantly changed the effect of takeover defenses on firm value. Comparing the correlations found in this study to those of similar studies would not be meaningful, as the compositions of the indices are different. The results therefore suggest that takeover defenses are still primarily adopted by managers to protect themselves, supporting the managerial welfare hypothesis.

Models 3 and 4 test hypothesis 2, which concerns the effects of takeover defenses on profitability. Return on Assets (ROA) is used as the dependent variable in these models. Profitability is less often used than firm value or stock returns, but as with Tobin's Q, the effect is hypothesized to be negative. Model 3 indeed finds a significant negative effect of the level of TDI on firm profitability. When including year dummies in model 4, the effect is slightly smaller, yet still significant at the 1% level.

The inclusion of year dummies is necessary in order to avoid overestimating the effect of takeover defenses. To illustrate this, observe the sharp increase in the 2009 mean of the TDI in table 2b. This increase was likely caused by the financial crisis of 2008, which lead to firms having lower market values. Their lower valuation made them more vulnerable to hostile

takeovers, leading them to adopt more takeover defenses. Simultaneously their profitability and value decreased. Not including the year dummies could partly attribute the decrease in profitability to the adoption of takeover defenses.

Both models find a significant negative effect of higher levels of TDI on firm profitability. These results were expected based on studies such as Field and Karpoff (2002) and Cremers et al. (2009). Based on models 1-4, higher levels of TDI are associated with lower firm value and lower profitability.

Table 5: Tobin's Q and ROA regressions of the TDI

This table reports the pooled OLS regressions of Tobin's Q (models 1 and 2) and ROA (models 3 and 4) on the TDI and various controls. Models 2 and 4 include Year dummies as control variables. For descriptions of all variables used, consult Appendix C. All regressions use White (1980) robust standard errors. Standard errors are reported in parentheses and levels of statistical significance are indicated by *, ** and *** for 10%, 5% and 1% respectively.

Model:	1	2	3	4
	Tobin's Q	Tobin's Q	ROA	ROA
TDI	-0.041	-0.048	-0.004	-0.003
	(6.05)***	(6.98)***	(6.18)***	(5.91)***
Log (Assets)	-0.103	-0.113	-0.002	-0.002
	(11.82)***	(13.16)***	(2.79)***	(2.55)**
Log (Age)	-0.046	-0.011	0.004	0.003
	(2.35)**	(0.59)	(2.14)**	(1.75)*
B/M	-0.042	-0.037	-0.005	-0.005
	(5.54)***	(5.24)***	(6.16)***	(6.14)***
CAPEX/Assets	0.599	0.657	0.137	0.132
	(2.88)***	(3.17)***	(4.44)***	(4.22)***
Leverage	-0.194	-0.180	-0.018	-0.018
	(4.96)***	(4.95)***	(4.42)***	(4.40)***
R&D/Sales	0.448	0.457	-0.073	-0.073
	(2.77)***	(2.86)***	(5.40)***	(5.35)***
Delaware Inc.	0.129	0.128	0.007	0.007
	(6.29)***	(6.33)***	(3.80)***	(3.79)***
Y2008		-0.348		0.002
		(8.38)***		(0.62)
Y2009		-0.203		-0.015
		(5.04)***		(3.99)***
Y2010		-0.090		0.000
		(2.17)**		(0.06)
Y2011		-0.139		0.006
		(3.37)***		(1.62)
Y2012		-0.111		-0.002
		(2.73)***		(0.47)
Y2013		0.114		-0.007
		(2.51)**		(1.93)*
Y2014		0.130		-0.007
		(2.84)***		(1.72)*
Constant	3.070	3.104	0.121	0.125
	(27.71)***	(27.68)***	(13.03)***	(12.82)***
R^2	0.14	0.16	0.13	0.14
N	9769	9769	9769	9769

4.2 Comparing the effects of the Primary Defenses and Other Defenses

The results of the regressions which test hypotheses 3 and 4 are provided by table 6. The objective of these hypotheses is to determine whether the Primary Defense Index has a stronger negative effect on firm performance than the Other Defense Index. Hypothesis 3 tests this in terms of firm value as measured by Tobin's Q. Hypothesis 4 tests for profitability as measured by ROA.

Models 5 and 6 both show a significant negative effect of higher levels of PDI on firm profitability. Both coefficients are significant at the 1% level, suggesting both a negative association with firm value and firm profitability. When these coefficients are compared to those of the TDI, higher correlations are found for the PDI than for the TDI. In contrast, models 7 and 8 show a smaller negative effect for the ODI than for the TDI. This effect, however, is also significant at the 1% level. These results suggest that the defenses contained in the PDI have a stronger negative effectiveness on average than the ODI defenses.

Models 9 and 10 include both PDI and ODI in the same regressions, again using Tobin's Q and ROA as dependent variables. When comparing the models 5-8 to 9-10, coefficients are nearly equal and there is no difference in statistical significance. In order to avoid omitted variable bias, models 9 and 10 are considered to be the definitive versions.

Both models 9 and 10 find that higher levels of PDI have a stronger negative effect on firm performance than higher levels of ODI. These results support the findings of Bebchuk et al. (2005) and Brown and Caylor (2006), who found that a small number of takeover defenses can explain a lot if not all of the negative effects of higher levels of broader indices of takeover defenses. A partial explanation for the lower coefficients of the ODI could be that certain provisions possess contrasting effects.

An example of such a provision, which coincidentally has seen increased adoption, as shown in table 1, is the golden parachutes provision. Firstly, golden parachutes decrease the chance of managerial self-dealing and thus motivate managers to act in the shareholders' best interest during a takeover. Secondly, golden parachutes can act as a takeover defense, because the activation of golden parachutes decreases the value of the target firm. Their bilateral influence is perhaps a characteristic of more provisions in the ODI.

Table 6: Tobin's Q and ROA regressions of the PDI and ODI

This table reports the pooled OLS regressions of Tobin's Q (models 5, 7 and 9) and ROA (models 6, 8 and 10) on the PDI and/or ODI and various controls. All models include year dummies, but their coefficients have been omitted. For descriptions of all variables used, consult Appendix C. All regressions use White (1980) robust standard errors. Standard errors are reported in parentheses and levels of statistical significance are indicated by *, ** and *** for 10%, 5% and 1% respectively.

Model:	5	6	7	8	9	10
	Tobin's Q	ROA	Tobin's Q	ROA	Tobin's Q	ROA
PDI	-0.075	-0.008			-0.074	-0.008
	(5.55)***	(6.29)***			(5.49)***	(6.25)***
ODI			-0.036	-0.002	-0.036	-0.001
			(4.49)***	(2.12)**	(4.40)***	(1.99)**
Log (Assets)	-0.125	-0.003	-0.113	-0.002	-0.118	-0.003
	(14.11)***	(3.69)***	(12.70)***	(2.68)***	(13.07)***	(3.27)***
Log (Age)	-0.023	0.003	-0.016	0.003	-0.013	0.003
	(1.21)	(1.35)	(0.85)	(1.39)	(0.70)	(1.57)
B/M	-0.037	-0.005	-0.037	-0.005	-0.037	-0.005
	(5.25)***	(6.17)***	(5.19)***	(6.10)***	(5.26)***	(6.18)***
CAPEX/Assets	0.651	0.131	0.652	0.131	0.657	0.132
	(3.15)***	(4.24)***	(3.13)***	(4.19)***	(3.18)***	(4.24)***
Leverage	-0.180	-0.018	-0.178	-0.018	-0.181	-0.018
	(4.92)***	(4.40)***	(4.90)***	(4.37)***	(4.95)***	(4.41)***
R&D/Sales	0.454	-0.073	0.455	-0.073	0.456	-0.073
	(2.84)***	(5.41)***	(2.86)***	(5.34)***	(2.85)***	(5.40)***
Delaware Inc.	0.174	0.011	0.126	0.008	0.145	0.010
	(8.59)***	(6.01)***	(6.11)***	(4.12)***	(6.99)***	(5.17)***
Constant	3.159	0.136	2.961	0.114	3.174	0.137
	(26.59)***	(13.15)***	(27.55)***	(12.12)***	(26.70)***	(13.21)***
Year dummies included	YES	YES	YES	YES	YES	YES
R^2	0.16	0.14	0.16	0.13	0.16	0.14
N	9769	9769	9769	9769	9769	9769

Part V: Conclusion

This thesis investigates empirically what the effects of takeover defenses on firm performance are. These effects have been studied in previous literature, with most studies observing a negative effect. By analyzing more recent data to account for the effects of Sarbanes-Oxley legislation and the financial crisis, this study also finds evidence that takeover defenses have a negative effect on firm performance, both in terms of lower firm value and lower profitability. Hypotheses 1 and 2, which stated that takeover defenses would have a negative effect on firm value and profitability, can therefore not be rejected.

This research also compares the magnitude of the effects of an index of prominent takeover defenses to those of less prominent defenses. The results show that primary takeover defenses have a stronger negative effect than other takeover defenses. Based on these results, hypotheses 3 and 4 cannot be rejected. The evidence this research presents is consistent with Bebchuk et al. (2005) and Brown and Caylor (2006), who find that a small number of defenses are responsible for the negative effects on firm performance that have been ascribed to takeover defenses.

The recorded negative effects suggest that even after the adoption of the Sarbanes-Oxley Act and the financial crisis of 2008, takeover defenses are still mainly adopted as a means of managerial entrenchment. The results thus indicate that the role of takeover defenses has not changed since they were first introduced in the 1980s. As the hypotheses based on existing literature cannot be rejected, this study's findings further strengthen previously found evidence supporting the managerial welfare hypothesis. Excessive protection from the market for corporate control can cause conflicts of interests exacerbating the agency problem and leading to suboptimal decision making.

Based on these results, shareholders should remain vigilant when voting on the adoption of takeover defenses and investors should beware of well-defended firms. Although the results do not reveal managerial motivations, takeover defenses protect managers, whether managers had intended this is irrelevant. Perhaps even well-meaning managers ought to be more conservative regarding defense adoption, as defenses could, unintentionally, keep the right person from leading the firm. Additionally, the defenses can be used wrongfully by potential successors. Besides, as shareholders cannot know the manager's mind, they might perceive defense adoption in the interest of the shareholders as managerial self-dealing.

This research concludes with a few limitations and recommendations. As is noted in section 3.2, it is somewhat unrefined to approximate the degree to which a firm is defended against takeovers using an equally weighted index. This research has tried to address the inequality of the defenses by also investigating two more restricted indices. Future studies could perhaps create a broad weighted index of takeover defenses. This would avoid the use of multiple indices or the use of a small index of prominent defenses that disregards the effects of other defenses.

Second, this study and the vast majority of existing literature examine the effects of takeover defenses on the performance of U.S. firms. Whilst this is an understandable choice, it would be fruitful if future studies would investigate the effects for firms in different geographies, for instance continental Europe and Japan. The corporate governance systems in these countries focus more heavily on internal corporate governance, with an emphasis on concentration of shareholders. A comparison could be made to U.S. or U.K. firms with an emphasis on the different roles large shareholders play in both external corporate governance systems.

Apart from a different region, a few additional recommendations regarding dataset construction can be made. Future research can build on this thesis' findings by using a different data source and making a comparison. Moreover, future research should focus more heavily on the most effective takeover defenses. However, event-study methodology, which has often been used to study individual powerful defenses, would perhaps not be optimal. Instead, one could compare the performances of firms with and without such a defense over a longer period of time, whilst controlling for the other defenses by using the TDI or a similar construction.

Lastly, this research has investigated the effects on firm performance, though this is not the only goal worth pursuing. The results of this and other studies suggest that takeover defenses are predominantly obstructions of external corporate governance. The resulting reduction in hostile takeovers could however have positive effects for stakeholders such as employees, customers and community. In contrast, suboptimal decision making by management could have negative effects for these stakeholders as well. Integrating these aspects in the analysis would lead to a more complete perspective.

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Appendix A: ISS definitions of the 14 Takeover Defenses[2]

Primary defenses:

Poison Pill: If any shareholder should acquire more than a predetermined percentage of shares, the other shareholders gain the right to buy more shares at a discount, diluting the acquiring company's shares.

Staggered Board: A board of directors in which directors are divided into separate groups (typically three) with each group being elected to overlapping terms.

Limitation on Amending Bylaws: A provision limiting shareholders' ability to amend the corporate bylaws through majority vote.

Limitation on Amending the Charter: A provision limiting shareholders' ability to amend the corporate charter through majority vote.

Other defenses:

Blank Check Preferred Stock: Stock that is 'blank', giving the board of directors broad discretion in establishing the stock's voting, dividend and other rights when issued.

Confidential Voting (Secret Ballot): A system of voting that ensures managers are unable to observe the way individual shareholders vote.

Cumulative Voting: A provision eliminating shareholders' ability to apportion their votes in an election.

Fair Price Requirements: A provision requiring that a bidder pays all shareholders a "fair price," typically the highest price paid by the bidder prior to a tender offer being made.

Golden Parachutes: A severance agreement that provides benefits to management/board members in the event of firing, demotion or resignation following a change in control.

Limitation to Call Special Meeting: A provision limiting shareholders' ability to act by calling a special meeting (as opposed to waiting for the regularly scheduled shareholders' meeting).

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[2] ISS. 2016. ISS Governance. Retrieved from https://wrds-web.wharton.upenn.edu/wrds/connect/index.cfm

Limitation to Act by Written Consent: A provision limiting shareholders' ability to act via written consent (as opposed to acting through a vote at the shareholders' meeting).

Majority Vote for Director Election: A provision requiring the vote of the majority of shareholders in a director election, as opposed to plurality voting.

Supermajority for Merger Approval: A provision requiring a larger than usual majority (typically 80%) of shareholders to approve a merger.

Unequal Voting Rights: A provision which changes voting power based on certain conditions.

Appendix B: Distribution and Descriptive Statistics of the PDI and ODI

Table 2c: Distribution of the PDI

This table provides the percentage of firms at every PDI level and for every year throughout the study period.

	YEAR							
PDI Level	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
0	1.8%	1.0%	0.9%	0.8%	0.8%	0.4%	0.4%	0.3%
1	8.0%	8.1%	8.3%	8.6%	8.9%	8.2%	7.9%	8.0%
2	32.8%	34.6%	37.4%	40.9%	44.7%	48.7%	51.8%	54.3%
3	35.8%	37.5%	39.3%	38.1%	36.5%	35.3%	34.6%	32.4%
4	21.6%	18.9%	14.0%	11.6%	9.1%	7.4%	5.4%	5.0%
	100%	100%	100%	100%	100%	100%	100%	100%

Table 2d: Descriptive Statistics of the PDI

This table provides descriptive statistics of the primary defense index levels for every year throughout the study period.

Year	N	Min.	Mean	Max.	Std. Dev.	Median
2007	1112	0	2.67	4	0.96	3
2008	1155	0	2.65	4	0.91	3
2009	1189	0	2.57	4	0.87	3
2010	1237	0	2.51	4	0.84	2
2011	1237	0	2.44	4	0.81	2
2012	1262	0	2.41	4	0.76	2
2013	1279	0	2.37	4	0.72	2
2014	1298	0	2.34	4	0.71	2

Table 2e: Distribution of the ODI

This table provides the percentage of firms at every ODI level and for every year throughout the study period.

| | YEAR | | | | | | | |
ODI Level	2007	2008	2009	2010	2011	2012	2013	2014
0	0.8%	0.5%	0.3%	0.4%	0.2%	0.2%	0.2%	0.2%
1	10.4%	13.0%	3.2%	1.9%	2.2%	1.6%	2.0%	1.8%
2	25.6%	22.2%	18.3%	16.5%	13.3%	13.4%	12.9%	12.1%
3	29.2%	29.2%	26.8%	26.5%	23.1%	23.1%	22.8%	22.3%
4	23.2%	21.0%	27.0%	27.1%	25.2%	25.4%	27.8%	27.4%
5	7.6%	9.8%	16.7%	18.9%	23.3%	23.6%	22.8%	24.2%
6	2.7%	3.5%	5.9%	6.6%	9.5%	9.5%	9.1%	9.4%
7	0.4%	0.9%	1.8%	1.9%	3.0%	2.8%	2.1%	2.1%
8	0.0%	0.0%	0.1%	0.2%	0.2%	0.5%	0.4%	0.5%
9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	100%	100%	100%	100%	100%	100%	100%	100%

Table 2f: Descriptive Statistics of the ODI

This table provides descriptive statistics of the other defense index levels for every year throughout the study period.

Year	N	Min.	Mean	Max.	Std. Dev.	Median
2007	1112	0	2.99	7	1.26	3
2008	1155	0	3.05	7	1.36	3
2009	1189	0	3.60	8	1.32	4
2010	1237	0	3.72	8	1.32	4
2011	1237	0	3.96	8	1.38	4
2012	1262	0	3.97	8	1.38	4
2013	1279	0	3.94	8	1.34	4
2014	1298	0	3.98	8	1.34	4

Appendix C: Variable Descriptions

TDI	Takeover Defense Index, which assigns a value of 0-14 to each firm in the sample. This value is based on the portion of 14 selected takeover defenses a firm uses, with each defense yielding one point. For a list and description of the individual defenses in the TDI, see Appendix A.
PDI	Primary Defense Index which assigns a value of 0-4 to each firm in the sample. This value is based on the portion of 4 selected primary takeover defenses a firm uses, with each defense yielding one point. For a list and description of the individual defenses in the PDI, see Appendix A.
ODI	Other Defense Index which assigns a value of 0-10 to each firm in the sample. This value is based on the portion of the 10 takeover defenses (not included in the PDI) a firm uses, with each defense yielding one point. For a list and description of the individual defenses in the ODI, see Appendix A.
Tobin's Q	This proxy of firm value is the ratio of the market value of assets to the book value of assets. The market value of assets is equal to the book value of assets plus the market value of common stock less the sum of book value of common stock and balance sheet deferred taxes.
ROA	Return on Assets is obtained by dividing Earnings Before Interest and Taxes (EBIT) by Total Assets
Log (Assets)	The natural logarithm of the Total Assets.
Log (Age)	The natural logarithm of the number of fiscal quarters a firm has been publicly traded.
Book/Market	The Book Value of a Firm divided by the Market Value of a Firm. This variable is obtained by subtracting Total Debt from Total Assets and dividing this Book Value by the Total Market Value.
CAPEX/Assets	Capital expenditures dividend by Total Assets.
Leverage	Total Debt divided by Total Market Value
R&D/Sales	R&D expenditures dividend by Sales Revenue.
Delaware Incorporation	A dummy variable indicating whether or not a firm is incorporated in the state of Delaware, coded 1 and 0 respectively. Over 50% of publicly traded U.S. firms are incorporated in Delaware, due to its flexible business formation statute and business-friendly legal climate.
Total Market Value	The outstanding shares multiplied by the Fiscal Annual Closing Price of a firm's shares.

All monetarily measured variables are measured in millions of United States dollars.