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## Board composition on the voluntary adoption of clawback

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# Abstract

Prior research on clawback provisions focused on the effectiveness of such provisions. This study contributes to the existing literature by investigating the influence of board composition on clawback adoption. Using a sample of 1,705 firm observations between 2007-2016, this study documents a positive influence of board size and board independence on clawback adoption. Furthermore, I find a negative influence of CEO duality on clawback adoption. The findings provide new insights into the underlying motives of clawback adoption and is thus relevant to the debate of mandatory clawback implementation.

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**Keywords:** clawback provision; corporate governance; board of directors; board composition; board independence; board diversity, CEO Duality

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# Acknowledgement

After years of postponing the writing of my thesis, I am finally proud to complete the final phase of my master program by presenting to you this master thesis on the influence of board composition on the voluntary adoption of clawback provisions. I am quite satisfied with the topic of choice, as my previous topic did not motivate me enough to complete the thesis process. Along with working full time as a junior auditor, and then grieving the passing of my father, I kept postponing my thesis. Eventually, I decided to completely start over with a new topic. I chose to research the voluntary adoption of clawback, which I found quite intriguing.

I would like to thank, first, my supervisor, Dr Y. Gan for guiding me through this process. Secondly, I would like to thank my family and friends, most importantly, my parents for believing in me and supporting me. I would also like to thank the members of the thesis group at Erasmus for keeping me accountable for every plan of action I created, and finally, I would like to thank God for making this accomplishment possible.

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## Table of contents

<b>1.Introduction</b>	5
<b>2.Theoretical Framework</b>	7
2.1 Corporate governance	7
2.2 Agency Theory	8
2.3 Board of Directors	9
2.4 Clawback Provision	10
2.5 Contribution	12
<b>3. Hypothesis Development</b>	13
3.1 Board Size	13
3.2 Board Independence	14
3.3 Board Diversity	14
3.4 CEO Duality	15
<b>4. Research Design</b>	17
4.1 Regression Model	17
4.2 Dependent variable & Independent variables	17
4.4 Control variables	18
4.5 Data & Sample selection	19
<b>5. Empirical Analysis and Results</b>	21
5.1 Descriptive statistics	21
5.2 Correlation analysis	24
5.3 Regression analysis	26
<b>6. Conclusion</b>	31
6.1 Conclusion	31
6.2 Limitations and suggestions for further research	32
<b>Reference List</b>	34
<b>Appendix</b>	40
Appendix A: Predictive Validity Framework	40
Appendix B: Variable Definitions	41
Appendix C: Sample Selection Procedure	42

# 1.Introduction

In recent years, clawback provisions have been increasingly prevalent as an innovative corporate governance mechanism (Velte, 2020). They are clauses within executive compensation contracts that authorize firms to recuperate compensation from executives in the event of financial misconduct (Erkens et al., 2018). Thus, serving as an incentive alignment tool to deter executives from misreporting financial information (Dehaan et al., 2013). This reduces the conflict of interest between the executives and shareholders of a firm (El Mahdy, 2020). Clawback provisions were first introduced in Section 304 of the Sarbanes-Oxley Act of 2002, and then later in Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection. Although not yet finalized, many firms have voluntarily started to adopt this tool (Erkens et al., 2018; Velte, 2020). Babenko et al. (2019) find that, as of December 2017, more than half of the firms in the SEC database have clawback provisions in place.

Given the increasing rate of implementation of clawback provisions, and the unknown effects under its regulations, many researchers started investigating its effectiveness (Chan et al., 2012; Dehaan et al., 2013; Iskandar-Datta & Jia, 2013). While there are many indications of the positive consequences of clawback provision, their contribution may be dependent on other corporate governance mechanisms. One such mechanism can be the composition of a board since clawbacks are voluntary and the board of directors have managerial discretion on the decision makings of a firm (Velte, 2020).

The thesis thereby aims to examine the relation between board composition and the voluntary adoption of clawback provisions by attempting to answer the following research question:

*RQ: Does the composition of a board of directors influence the voluntary adoption of clawbacks?*

Providing an answer to this research question is important, due to the emergence of clawback provisions as an innovative governance tool (Velte, 2020). The sample consists of 1705 observations for US-listed firms between 2007-2016. Via a correlation analysis, univariate testing, and logistic regression, the results show a significant positive influence of the size and independence of a board on clawback provisions and a significant negative influence of CEO Duality on clawback provisions. The results, however, do not find a significant influence of board diversity on clawback provisions.

This thesis contributes to the existing literature on corporate governance and the growing literature on clawback provisions. The findings are of interest to practitioners as it provides new insights into underlying motives for clawback adoption, thereby revealing that the contribution of clawback provisions as an incentive-alignment tool may be dependent on other factors such as the composition of the board of directors. This also adds relevance to the debate concerning mandatory clawback implementation (Velte, 2020).

The remainder of the thesis is organized as follows. Chapter 2 contains the theoretical framework where the main concepts are introduced. Chapter 3 presents the four hypotheses of the association between board composition and clawback adoption. Chapter 4 provides the research method and the construction of the sample data used to test the hypotheses. Chapter 5 then discusses the empirical findings. And finally, chapter 6 provides the conclusion of the research with an answer to the research question, the limitations of the research, and suggestions for future research.

## 2.Theoretical Framework

This chapter contains the theoretical framework that is necessary to build the predictions of this research. I will start with a general view on the concept of corporate governance, and the agency theory. After that, I will summarize the relevant concepts: board of directors and clawback adoption along with the relevant literature on the two. Lastly, I will introduce the contribution of this thesis to the existing academic literature.

### 2.1 Corporate governance

Corporate governance has become a topic of public interest in the past decades, following the corporate scandals Enron, WorldCom, and Tyca. The SEC<sup>1</sup> defines corporate governance, in their Code of Corporate Governance for Public Companies and Registered Issuers, as:

*“The system of stewardship and control to guide organizations in fulfilling their long-term economic, moral, legal and social obligations towards their shareholders/members and other stakeholders.”*

In other words, corporate governance is a set of mechanisms and processes that help ensure that organizations are directed and managed to create value for their stakeholders (Merchant & Van der Stede, 2017). The ultimate purpose is, therefore, securing the continuity of the organization by maintaining good relations with stakeholders (Vaassen et al., 2009). It deals with control, decision-making power, responsibility, oversight, integrity, and accountability, and has thus become an important framework (Vaassen et al., 2009) . There is no single model of good corporate governance (Arcot & Bruno, 2007). Its effectiveness is influenced by the laws & regulations, the historical & cultural factors, the industry, and the productive activity (Maher & Andersson, 2000).

Corporate governance can be classified into two types: Internal and external governance. Internal governance mechanisms focus on the internal objective of an organization, while

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<sup>1</sup> Security and Exchange Commission, SEC Memorandum Circular No.24, Series of 2019

external governance covers issues related to the outside of an organization (Denis & McConnell, 2003; Walsh & Seward, 1990). This thesis focuses on the internal governance mechanisms: board of directors and the voluntary clawback adoption.

## **2.2 Agency Theory**

While there are many theories of corporate governance that address issues in an organisation, this thesis focuses on the agency theory.

Corporate governance has traditionally been associated with the agency theory as the issues related to corporate governance arise whenever there is an agency problem (Hart, 1995). This problem stems from the principal-agent relationship resulting from the separation of ownership and control, which is when the person who owns the firm (principal) is not the one who manages or controls it (agent). Because of this separation, the interest of the principal - the shareholder, differs from that of the agent - the manager. Given that the managers do not reap the full benefits, nor bear the full costs of their actions, but the shareholders do, their interests are not aligned. The managers then act in their best interest instead of that of the shareholders, who delegated the decision-making authority to them and expected them to act accordingly to their (the shareholders) interest (Maher & Andersson, 2000).

The agency theory, developed by Jensen & Meckling (1976), attempts to resolve this agency problem, by demonstrating that the principal can assure that the agent acts in their best interest if appropriate incentives are implemented to align the agent's interest with that of the principal. Aside from incentivizing the agent, the theory also includes monitoring the agent to resolve the agency problem. Corporate governance structures work to mitigate this conflict of interest resulting from the separation of ownership and control (Williamson, 1984). Without these governance structures, managers are more likely to deviate from the interests of shareholders (Fama & Jensen, 1983b).



## 2.3 Board of Directors

As previously stated, corporate governance refers to internal and external governance mechanisms that work to balance principal-agent conflicts of interest, resulting from the separation of ownership and control, and to reduce the likelihood that managers deviate from the interest of the shareholders (Williamson, 1984). One such internal mechanism is the board of directors (Fama & Jensen, 1983b). The board of directors refers to an appointed group of individuals that represent the shareholders and is primarily responsible for monitoring managerial performance, preventing conflict of interests, and maximizing shareholder's value (Williamson, 1984). It is considered an important internal governance mechanism because there then exists an intermediate group to monitor and evaluate the performance of managers (Baysinger & Hoskisson, 1990). Zahra and Pearce (1989) describe the roles of the board using four theoretical perspectives. The first perspective is the legalistic role, which suggests that the function of the board consists of executing corporate leadership and protecting the shareholders' interest. The second is the resource dependence role, which suggests that the board's function is bringing external vital resources to the firm and reducing uncertainty. The third perspective is the hegemony role, which suggests that the board's function is to maintain the power of those in authority by supporting the decisions of executive management. The last perspective, and the most applied, is the agency theory perspective, which considers the primary role of the board as monitoring the actions of managers to ensure efficiency and shareholder value (Zahra & Pearce, 1989). This thesis focuses on the agency theory perspective of corporate governance.

The primary board-related aspects that have been studied in the literature are board composition and executive compensation (Denis & McConnell, 2003). This thesis focuses on the following board composition characteristics: board size, board independence, board diversity, and CEO duality. The objective is to examine the influence of these characteristics on policies that allow firms to recoup compensation from managers: clawback provisions.

## 2.4 Clawback Provision

Following the accounting scandals between 2000-2002, the credibility in the reporting systems of corporate accounting weakened. There became an urgent need for effective corporate governance solutions to reinstate public trust (Iskandar-Datta & Jia, 2013). Clawback provisions (“clawbacks”) was a step in that direction. Clawbacks are clauses within executive compensation contracts that authorize firms to recuperate compensation from executives in the event of financial misconduct (Erkens et al., 2018). It serves as an incentive alignment tool ex-ante deterring executives from misreporting financial information and ex-post penalizing executives who do (Dehaan et al., 2013). This reduces the conflict of interest between the executives and shareholders of a firm (El Mahdy, 2020).

Clawbacks were first introduced in Section 304 of the Sarbanes-Oxley Act of 2002, hereinafter SOX 2002, in response to the Enron scandal. The act mandates that: “In the event of an accounting restatement due to material noncompliance, as a result of intentional misconduct, executives are to reimburse any bonus, incentive-based or equity-based compensation they received during the 12-month following either the public issuance or the filing of the financial statement to the SEC, and reimburse any profits from the sale of securities during that 12 months<sup>2</sup>.” Although mandated, research shows that the SEC has been unsuccessful in enforcing this act, due to ambiguities in Section 304 (Brink et al., 2019; Fried, 2010). Following the financial crisis in 2008-2009, Section 954 of the Dodd-Frank Act was introduced, which requires that firms voluntarily adopt and enforce clawback themselves, by recovering from any current or former executive incentive-based compensation during the 3-year following the date in which the firm is required to file a restatement<sup>3</sup>. Although not mandatory yet, research indicates

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<sup>2</sup> Sarbanes-Oxley Act of 2002, Section 304, Public Law 107-204, 116 Stat.745, enacted July 30, 2002

<sup>3</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 954, Public Law 111-203, 124 Stat.1376, enacted July 21, 2010

that voluntary clawback adoption has been increasing, even before the Dodd-Frank Act. (Babenko et al., 2019; El Mahdy, 2020; Fried, 2010).

### *Literature review on the effectiveness of clawback*

Given the increasing rate of implementation of clawbacks, and the unknown effects under its regulations, many researchers started investigating its effectiveness (Chan et al., 2012; Dehaan et al., 2013; Iskandar-Datta & Jia, 2013).

Chan et al. (2012) find evidence that managers have a lower incentive to engage in earnings management when clawback is present. They attribute their findings to the significant decline in accounting restatements after clawback implementation. This is in line with Dehaan et al. (2013), and Iskandar-Datta & Jia (2013) who find evidence that investors respond positively to clawback. According to them, investors perceive firms that adopt clawback as more credible, given the higher earnings response coefficient. Kyung et al (2019) further find evidence that investors view earnings as more informative after clawback, and Chan et al. (2012) find similar evidence on the positive impact of clawback on auditors' perception. Auditors perceive that managers, subject to clawback, will improve internal control systems, thus making them less likely to report internal control weaknesses. Babenko et al (2017) also find evidence that firms that adopt clawback experience a reduction in the volatility of stock returns, a higher environmental-social-governance (ESG) score, and fewer lawsuits.

Although these studies document an improvement in the quality of financial reporting, Kyung et al. (2019) find that this improvement is due to the increase in the costs of misstating GAAP earnings. By examining the unintended consequences of clawback on non-GAAP reporting they find that due to the costly misstatement of GAAP earnings, opportunistically motivated managers shift their focus from GAAP reporting to non-GAAP after the adoption of clawback, suggesting a greater opportunistic use of disclosures because of clawback.

As with corporate governance mechanisms, not all clawbacks are the same. Erkens et al. (2018) find evidence that there are strong and weak clawback adopters. Based on their research, strong clawback adopters experience improvements in financial reporting quality in comparison to weak or non-adopters, thus demonstrating the differential use of clawback.

## **2.5 Contribution**

While there are many indications of the consequences of clawback, there is however little research on the determinants (Velte, 2020). Recent studies have started investigating possible clawback determinants (Babenko et al., 2017; Chen & Vann, 2014, 2017; Hsu et al., 2018). Babenko et al. (2017) and Chen & Vann (2014, 2017) find evidence that firms are more likely to adopt clawback when there is strong corporate governance. An example of this is the board of directors (Chen & Vann, 2017). As clawbacks are still voluntary, the board of directors have managerial discretion on the decision to implement clawback, thus suggesting that the effectiveness of clawback may be dependent on the board of directors (Velte, 2020). This thesis focuses on the relation between the two, by examining the influence of the board of directors on clawback.

Prior literature focuses on the effectiveness of either clawback or board of directors as incentive-alignment tools. There is relatively limited research on the relation between the two. Chen & Vann (2014, 2017) examine the relation between internal corporate governance and clawback for S&P firms between 2005-2009 and find evidence of a positive complementary relation between the two, suggesting that firms with strong internal corporate governance mechanisms, of which board of directors, in place are more likely to adopt clawback. This thesis expands on this by further investigating the influence of the board of directors on clawback for US-listed firms between 2007-2016.

By examining the relation between the two measures, this thesis aims to add insight into whether the characteristics of a board can influence policies that allow firms to recoup compensation from managers for financial misreporting, and whether the contribution

of clawback can be due to other factors, which in turn also adds relevance to the debate about mandatory clawback implementation.

### 3. Hypothesis Development

This chapter continues with the literature review by using the underlying theory and insights provided to formulate hypotheses of the association between board composition and clawback adoption.

#### 3.1 Board Size

One of the important characteristics of a board is its size, as it can have a significant impact on the effectiveness of the board (Raheja, 2005), and on firm value (Eisenberg et al., 1998; Yermack, 1996). Prior literature indicated that the board size should be limited to maximum 10 members (Lipton & Lorsch, 1992). Jensen (1993) finds evidence that large boards can be costly. According to them, larger boards are more prone to CEO control and will not allow all directors' contributions, therefore leading to a lack of consensus and ineffective discussion. Similarly, Eisenberg et al. (1998) document that coordination and communication problems increase when board size increases, leading to greater agency problems such as free-riding and internal conflicts. Gertner & Kaplan, (1996) added that due to the agency problems in large boards, shareholders prefer smaller boards instead of larger boards, and Guest (2009) finds a negative impact of the size of the board on the profitability of a firm. Teti et al. (2017) added that CEO's may act in their interest due to the lack of effective supervision resulting from the poor governance quality of a large board. This suggests that there may be a need to implement clawback as an internal control mechanism to combat the agency problem that arises with the size of the board. This leads to the following hypothesis:

*H1: Board size is positively associated with the voluntary adoption of clawback.*

### **3.2 Board Independence**

Next to board size, board independence plays a crucial role as part of the governance structure of the board of directors (Fuzi et al., 2016). To enhance the monitoring of top management and increase corporate governance standards, SOX 2002 requires that most independent directors sit on the board (SOX, 2002). Independent directors, also referred to as outside directors, are directors with no affiliation to the firm or related persons. They better represent the shareholder's interest through their monitoring function, in which they resolve conflicts of interest between managers and shareholders (Bathala & Rao, 1995; Fama & Jensen, 1983a). Weisbach (1988) shows that independent directors add firm value through their ability and power of appointing and replacing CEOs. Similarly, Beasley (1996) and Dechow et al (1996) corroborated this respectively by finding evidence that firms with more independent directors are less likely to suffer from financial statement fraud and earnings manipulation. They lower the risk of information asymmetry (Goh et al., 2016), and increase corporate transparency (Armstrong et al., 2014). Faleye et al. (2011) further find evidence that boards that have the most independent directors display better monitoring quality and greater performance. Kumar & Sivaramakrishnan (2008) documented that independent directors may be more conservative, and favour more conservative strategies, as they do not own any equity of the firm. Given this, an independent board may adopt clawback as an incentive-alignment tool to better monitor management of a firm, since clawbacks are proven significant in reducing information asymmetry (Daniels et al., 2009). This then leads to the following hypothesis:

*H2: Board Independence is positively associated with the voluntary adoption of clawback.*

### **3.3 Board Diversity**

In recent years, board diversity has become an important characteristic within the literature of board composition (Rao & Tilt, 2016). The effective functioning of the board is proven to be influenced by the demographics of the members on the board (Post & Byron, 2015). Researchers have given several definitions to board diversity. Board

diversity can be defined by nationality, age, gender, or educational background (Ararat et al., 2015). This thesis focuses on gender diversity as a proxy for board diversity. The importance of female directors has increased significantly. Studies on the effect of gender-diverse boards find empirical evidence of its positive influence. Based on the agency theory, the monitoring function of the board works to solve issues arising from conflict of interest. Allowing a more extensive range of opinions may be effective in this function. That being so, a gender-diverse board may positively impact minimising potential agency problems (Erhardt et al., 2003). Female directors are proven to be more concerned about the shareholders and make decisions that would promote shareholder's value (Levi et al., 2014; Nguyen & Faff, 2007). Institutional investors also favour a more gender-diverse board (Horváth & Spirollari, 2012; Huang & Kisgen, 2013). This is especially true, given that gender-diverse boards are proven to engage in fewer financial misconduct (Wahid, 2019). Gul et al. (2011) provide evidence that gender-diverse boards increase transparency and monitoring, and Eckel & Grossman (2008) finds that female directors are more risk-averse, suggesting that they may want to implement clawbacks in executive compensation contracts in response to their risk aversion. This leads to the following hypothesis:

*H3: Gender diversity on the board is positively associated with the voluntary adoption of clawback.*

### **3.4 CEO Duality**

CEO Duality is when the CEO of a firm also occupies the role of chairman on the board (Rechner & Dalton, 1991). Prior literature approaches this dual position via two theories: The agency theory and the stewardship theory. According to the agency theory, a CEO serving as the chairman of the board enhances his or her power as a CEO relative to the board, thereby reducing the monitoring effectiveness of the board, because then the CEO who is responsible for managing the firm also posits the role of evaluating the management of the firm, which leads to a conflict of interest (Finkelstein & D'aveni, 1994). Several studies provide support for this theory. Aktas et al. (2019) find evidence that CEO

duality reflects stronger managerial power and weaker board oversight. According to Brown et al. (2011), this leads to CEO entrenchment, where the board may not adopt clawback. Bliss et al. (2007) also provide evidence of the perception of auditors to CEO duality. They find a positive relation between CEO Duality and higher audit fees, suggesting that auditors perceive a higher inherent risk when CEO duality is present.

In contrast, the stewardship theory favours CEO duality. According to this theory, there is no conflict of interest because the CEO is intrinsically motivated to act in the best interest of the collective (Davis et al., 1997; Donaldson & Davis, 1991). Finkelstein & D'aveni (1994) also argue that CEOs and shareholders do not always have different interests, and Argyris (2017) finds similar evidence that implementing control structures can be counterproductive and lowers the intrinsic motivation of the CEO. Rather than implementing control structures such as clawback, the theory supports empowering governance structures, such as high authority and discretion, for example, CEO duality.

Consistent with this, this thesis develops the following hypothesis:

*H4: CEO duality is negatively associated with the voluntary adoption of clawback.*



## 4. Research Design

This chapter provides the methodology that is used to test the hypotheses that are developed in the previous chapter. Section 4.1 introduces the regression model, and 4.2 defines the dependent variable of Clawback and independent variables of Board Composition. Section 4.3 then elaborates on the control variables that are added to the empirical model and how they are operationalised. And finally, section 4.5 provides argumentation to the sample selection and institutional setting, the source of data, and the preparation thereof.

### 4.1 Regression Model

All four hypotheses predict the effect of a board characteristic on clawback adoption. To test these hypotheses, this thesis follows Chen and Vann (2014), Brown et al. (2015), and Hsu et al. (2018) in employing a logistic regression model to examine the likelihood of clawback adoption, since the dependent variable, Clawback, is a binary variable. To examine the effects of board composition on the voluntary adoption of clawback, I modify their equation to form the model as follows:

$$\begin{aligned} \text{CLAWBACK} = & \beta_0 + \beta_1 \text{BOARDSIZE} + \beta_2 \text{BOARDINDEP} + \beta_3 \text{BOARDDIV} + \beta_4 \text{CEODUALITY} + \\ & \beta_5 \text{CEOTENURE} + \beta_6 \text{INSTOWN} + \beta_7 \text{SIZE} + \beta_8 \text{LEV} + \beta_9 \text{GROWTH} + \beta_{10} \text{PASTRESTATE} + \\ & \beta_{11} \text{LOSS} + \beta_{12} \text{DACC} + \beta_{13} \text{CEOCOMP} + \beta_{14} \text{R\&D} + \beta_{15} \text{ROA} + \beta_{16} \text{TOBIN'S Q} + \\ & \beta_{17} \text{INSIDEOWN} + \beta_{18} \text{INDUSTRY} + \beta_{19} \text{YEAR} + \varepsilon \end{aligned} \quad (1)$$

### 4.2 Dependent variable & Independent variables

Following prior literature on clawback adoption, the dependent variable within the equation, Clawback (*CLAWBACK*), is a binary variable that equals one when a firm has a clawback in place and zero otherwise.

The variable of interest for the first hypothesis is the independent variable Board Size (*BOARDSIZE*) and is measured by the number of directors who sit on the board (Teti et

al., 2017). The second one is Board Independence (*BOARDINDEP*), which indicates the percentage of independent directors who sit on the board (Armstrong et al., 2014). The third one is Board Diversity (*BOARDDIVERS*), measured by the percentage of female directors who sit on the board (Adams & Ferreira, 2009). And finally, the fourth variable of interest, CEO Duality (*CEODUALITY*), is a binary variable that takes on one if the CEO is also the chairperson on the board, and zero otherwise (Rechner & Dalton, 1991).

In the regression model,  $\beta_{1-4}$  are coefficients of board composition and reflect the association between each board characteristic with clawback. Based on my hypotheses I expect the coefficients to the variables Board Size ( $\beta_1$ ), Board Independence ( $\beta_2$ ), and Board Diversity ( $\beta_3$ ) to be positive, and the one to CEO Duality ( $\beta_4$ ) to be negative. A significantly positive  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  would indicate that firms with a large board, a more independent board, and gender-diverse board are more likely to adopt clawback provision, whereas a significantly negative  $\beta_4$  would indicate that firms where CEO has a dual-position negatively impacts the decisions to adopt clawback.

#### **4.4 Control variables**

To empirically test the association between board composition and clawback adoption, this thesis includes control variables, drawn from previous literature, to control for other omitted factors that could influence this association. Dehaan et al. (2013) and Chan et al. (2012) find that larger firms are more likely to adopt clawback. Iskandar-Datta & Jia (2013) and Addy et al. (2014) find that past restatements affect the likelihood of clawback adoption. Chan et al. (2012, 2013, 2015) then also find evidence of the association between clawback adoption and firm leverage, profitability, institutional ownership, discretionary accruals, growth opportunities, and firm's complexity. Gillan & Nguyen (2016) further finds that firms with poor financial performance are less likely to adopt clawback, and (Babenko et al., 2017) finds evidence that clawbacks are more effective for firms with highly compensated executives. Therefore, this thesis controls for Institutional ownership (*INSTOWN*), firm size (*SIZE*), firm leverage (*LEV*), Growth (*GROWTH*), past restatements (*PASTRESTATE*), loss (*LOSS*), Discretionary accruals (*DACC*), CEO

compensation (*CEOCOMP*), R&D Expenditures (*R&D*), Return on Assets (*ROA*), and Tobin's Q (*TOBIN'S Q*). This thesis also follows prior literature and controls for other corporate governance characteristics variables likely to influence the association between board composition and clawback, such as CEO tenure (*CEOTENURE*) and Inside Ownership (*INSIDEOWN*) (Erkens et al., 2018). Finally, to control for differences in clawback adoption across industries and over time, this thesis includes industry-specific (*INDUSTRY*) and year-specific (*YEAR*) effects. This is in line with prior research that uses these two variables to account for all variables that are not directly observable but constant, which then tackles an endogeneity concern. The predictive validity framework presented in the Appendix shows a visual of the conceptual relation and operationalization that is examined.

#### **4.5 Data & Sample selection**

As indicated by Babenko et al. (2019) and El Mahdy (2020), voluntary adoption of clawback has significantly increased among publicly listed firms in the US. Along with its regulatory relevance, the US has become an interesting and relevant institutional setting for empirical research on clawback adoption (Velte, 2020). For the sample selection, I received clawback data via my supervisor Dr Ying Gan from Dr Michael Erkens, who both are associate professors at the Erasmus School of Economics. This clawback data is of publicly listed firms in the US between 2007-2016. Thereby rendering my sample selection to be between 2007-2016. Following prior research on the significant increase of clawback adoption, the available data, and the time frame to conduct this I believe that these years allow me to draw a relevant conclusion on clawback.

For my other variables, I extract the required data from the appropriate databases. All databases used in this research are accessed through Wharton Research Data Services. I extract data on the board composition from Institutional Shareholder Services (ISS), the firm-characteristics control variables from Compustat Fundamentals Annual, data on restatements from Audit Analytics, CEO data from Execucomp, and data on Institutional Ownership from Thomson Reuters. I initially included the year 2006 in my dataset, as the

variable growth requires previous year data to be constructed. Once constructed, I then removed the year 2006 to remain consistent with the years throughout each dataset (Schouten, 2020). I use the statistical program STATA to process my sample selection procedure. After collecting the necessary data, I clean each dataset in STATA from missing and duplicate observations, and I construct the necessary variables that I use to run my regression. Once each dataset is prepared, I then merge them using a combination of their unique identifiers and the year present in each dataset. After merging, I remove firm observations of the financial industry (SIC Code: 6000-6999), as these firms follow specific regulations that mandate them to adopt clawback, and can therefore bias the results regarding clawback adoption (Babenko et al., 2017). I also check for missing variables and duplicate variables and remove observations containing such. Finally, I account for outliers that could affect the results by winsorizing all continuous variables at one per cent on each side of the distribution. These steps are in line with and following prior research papers on the voluntary adoption of clawback. The result is a final sample of 1705 firm-year observations between the years 2007 and 2016, of which a total of 889 clawback adopters, and 816 non-clawback adopters. A more detailed overview of the sample selection is presented in Appendix C.

## 5. Empirical Analysis and Results

This chapter discusses the empirical results. First off, section 5.1 provides various descriptive statistics of the final sample and the descriptive statistics of the comparison between clawback firms and non-clawback firms. Section 5.2 further provides the correlation analysis between variables within equation one. Finally, section 5.3 presents the results from the regression analysis that analyzes the effect of board composition on clawback adoption.

### 5.1 Descriptive statistics

Table 1 presents the yearly distribution of clawback adoption in the final sample. The number of firms adopting clawback increased significantly by 55% between 2007 and 2016. The increase in voluntary clawback adoption is consistent with prior research papers finding an increase throughout the years in their samples, as this can be due to the introduction of the regulations surrounding clawback and the expectation of the mandatory adoption (Chan et al., 2013).

Table 2 presents the descriptive statistics of the final sample. In the sample, 52% of the firms have clawback provisions in place, which is consistent with Mahdy (2019) stating that more than half of the firms have adopted clawbacks. Of the board composition characteristics, there are on average 9.23 directors on the board with a standard deviation of about 2 directors. The minimum number of directors is 5 and the maximum is 15. The average number of directors is consistent with the maximum number of 10 members indicated in prior literature, although there are firms within this sample with more than 10 members on the board. Additionally, close to 80% of the directors on the board are

**Table 1: Number of Clawback adopters by year**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Firms with clawback	22	40	52	76	85	102	119	127	128	138	889
Total number of firms	110	167	168	180	181	179	181	181	175	183	1705
Clawback adoption rate (in %)	20%	24%	31%	42%	47%	57%	66%	70%	73%	75%	52%

Table 1 reports the number of firms that voluntarily adopted clawback provision between 2007 and 2016, and the adsorption rate per year. The sample consists of US-listed firms from 2007-2016

**Table 2: Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Clawback	1705	0.521	0.5	0	1
BoardSize	1705	9.228	2.068	5	15
BoardIndep	1705	0.797	0.1	0.538	0.923
BoardDiv	1705	0.141	0.107	0	0.429
CEODuality	1705	0.062	0.24	0	1
InstOwn	1705	0.842	0.151	0.398	1.222
CEOTenure	1705	1.039	3.251	0	19
Size	1705	7.963	1.552	5.105	11.96
Leverage	1705	21.07	16.341	0	75.263
Growth	1705	0.068	0.194	-0.441	0.912
PastRestate	1705	0.201	0.401	0	1
Loss	1705	0.151	0.358	0	1
DACC	1705	-0.04	0.067	-0.269	0.182
CEOComp	1705	1.733	3.408	0	9.818
RD	1705	0.049	0.083	0	0.395
ROA	1705	5.437	9.005	-46.805	74.843
Tobin's Q	1705	1.636	1.128	0.406	6.969
InsideOwn	1705	0.416	1.34	0	10.849

Table 2 presents the descriptive statistics of the final sample of clawback adoption.

The sample consists of US-listed firms and the sample period is from 2007-2016. The variables are defined in the Appendix B.

independent directors. The minimum number of independent directors consists of 54% of the board members, and the maximum is 92% of the board members. This implies that the board of directors are predominated by outside directors (Horváth & Spirollari, 2012), consistent with the requirement in SOX 2002. Furthermore, 14.1% of the directors are female directors. Within the sample, there are firms with no female directors, and the maximum proportion of female directors is 43%. This implies that most firms' boards of directors are dominated by male directors. Lastly, in 6.2% of the cases within the sample, the CEO of the firm also functions as the chairman of the board. The average number of years that the CEO has been in that position is 1.04 years within the sample. The table

also shows that of the sample, institutional investors hold about 84% of the firm's outstanding shares, while top management holds about 42%, indicating the higher control that institutional shareholders play in comparison to top management. This can also be the reason for the increase of clawbacks in table 1, given that many shareholders demanded the adoption of clawback in compensation contracts (Hirsch et al., 2017). Regarding firm-level characteristics of the sample, the average firm has financial leverage of 21, 15,1% of firms report a loss, and 20.1% of firms have restated their financial statements within the past 3 years of the firm year.

Table 3 compares the means of the variables between clawback firms and non-clawback firms. Clawback firms have a significantly larger board, a more independent board, and a higher diversity within the board, as demonstrated by the higher means respectively: 9.8 versus 8.6, 0.82 versus 0.78, and 0.17 versus 0.12, which demonstrates the likelihood that firms with these characteristics are likely to voluntarily adopt clawback. Clawback firms also have a significantly lower CEO duality at a 5% level. This suggests that firms where there is a potentially higher CEO entrenchment are less likely to have clawback in place (Chen & Vann, 2014). They also have a lower CEO tenure in comparison to non-clawback firms, but this is insignificant in this sample. With regards to firm-level characteristics, clawback firms are significantly larger and higher levered in comparison to non-clawback firms. Thus, implying that larger and more levered firms are likely to have a clawback provision in place (Chan et al., 2012). Furthermore, clawback firms experience a significantly lower rate of growth and are less likely to report a loss. The percentage of shares held by top management is lower, and they have fewer instances of financial restatement. This suggests that firms with a higher growth rate in sales, and a higher chance of experiencing a net income loss are less likely to adopt clawback. It further implies that firms, where top management holds a higher percentage of shares or have restated its financial statements in the past 3 years, are less likely to have a clawback provision in place. These observations may signify the presence of earnings management

within a firm, which leads to a relatively low rate of clawback adoption (Harris & Bromiley, 2007).

*Table 3: Descriptive statistics of the comparison between clawback firms and non-clawback firms*

Variable	Non-clawback	Clawback firms	Diff	T-test
	Mean	Mean		
BoardSize	8.605	9.800	-1.194***	(-12.44)
BoardIndep	0.776	0.817	-0.040***	(-8.47)
BoardDiv	0.115	0.165	-0.050***	(-9.88)
CEODuality	0.080	0.045	0.035**	(2.98)
InstOwn	0.847	0.837	0.010	(1.34)
CEOTenure	1.191	0.900	0.291	(1.85)
Size	7.341	8.535	-1.194***	(-17.18)
Leverage	17.732	24.134	-6.402***	(-8.24)
Growth	0.085	0.052	0.033***	(3.49)
PastRestate	0.194	0.052	-0.013	(-0.69)
Loss	0.180	0.125	0.055**	(3.19)
DACC	-0.041	-0.039	-0.002	(-0.58)
CEOComp	1.650	1.810	-0.160	(-0.97)
RD	0.053	0.045	0.008*	(2.05)
ROA	5.283	5.578	-0.295	(-0.68)
Tobin's Q	1.622	1.649	-0.027	(-0.50)
InsideOwn	0.592	0.255	0.337***	(5.23)

Table 3 reports the univariate two-tailed test statistics for differences in means on the likelihood of clawback adoption vs non clawback adoption. T statistics are in parenthesis. \*, \*\*, and \*\*\* indicate significance level at 5%, 1%, and 0.1%. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers. The variables are defined in the Appendix B.

## 5.2 Correlation analysis

Table 4 provides the results of the correlations among variables. Clawback is significant and positively correlated with board size, board independence and board diversity at a 1% significance level. Thus, suggesting the likelihood of a firm with a large board, independent directors, and diversity to adopt clawback. Clawback is also significant and negatively correlated with CEO Duality at a 1% significance level, also suggesting the likelihood that firms, where the CEO has a dual position, are less likely to adopt clawback.



The table further presents a significant and positive correlation between board size, board independence, and board diversity, indicating that the larger the board the more independent directors there are on the board, and the more female directors there are. The significant and positive correlation between board independence and board diversity also indicates the independent female directors that are on the board. The table however shows a significant negative correlation between board size and CEO Duality at a 5% level, which suggests that the larger the board the less likely for a CEO to function as a chairperson. This can be because there are sufficient members on the board to have a separation of tasks. There is also a significant negative correlation between Clawback and CEO Tenure at a 10% level. This can indicate that CEOs with longer tenure might not be in favour of adopting clawback, signifying the possible influence of CEO entrenchment on clawback adoption, consistent with the agency theory (Chen & Vann, 2014).

With regards to firm characteristics, the table shows that clawback is significantly and positively correlated with a firm's size and financial leverage at a 1% level, and significantly and negatively correlated with growth, loss, and insider ownership at a 1% level. This suggests that larger and higher levered firms are more likely to adopt clawback and that firms with higher growth rates, higher instances of loss, and where top managers hold relatively sufficient shares are less likely to adopt clawback. The results are consistent with the results from the univariate test, demonstrating that clawback firms are larger, higher levered, have a lower growth rate, are less likely to report a loss, and have lower inside ownership.

Table 4: Pearson Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
(1) Clawback	1																		
(2) BoardSize	0.289***	1																	
(3) BoardIndep	0.201***	0.156***	1																
(4) BoardDiv	0.233***	0.318***	0.178***	1															
(5) CEO Duality	-0.072***	-0.051**	0.023	0.036	1														
(6) InstOwn	-0.032	-0.169***	0.142***	-0.098***	-0.049**	1													
(7) CEOTenure	-0.045*	-0.081***	0.016	-0.064**	0.009	0.027	1												
(8) Size	0.384***	0.642***	0.221***	0.296***	-0.003	-0.159***	-0.028	1											
(9) Leverage	0.196***	0.209***	0.147***	0.076***	0.030	0.011	-0.013	0.391***	1										
(10) Growth	-0.084***	-0.082***	-0.082***	-0.141***	-0.062***	0.062**	0.025	-0.045*	-0.042*	1									
(11) PastRestate	0.017	-0.033	-0.019	0.015	-0.019	-0.034	-0.020	-0.057**	-0.009	0.007	1								
(12) Loss	-0.077***	-0.074***	-0.021	-0.059**	-0.047*	0.040	-0.021	-0.067***	0.105***	-0.201***	0.062**	1							
(13) DACC	0.014	-0.015	0.006	-0.036	0.023	0.023	0.019	0.014	0.025	0.027	-0.010	-0.164***	1						
(14) CEOComp	0.023	0.004	0.005	0.023	0.012	-0.006	0.623***	0.054**	0.045*	-0.000	-0.006	-0.033	0.004	1					
(15) RD	-0.050**	-0.082***	-0.014	-0.055**	-0.061**	0.016	-0.006	-0.066***	-0.201***	0.104***	0.017	0.143***	0.031	-0.015	1				
(16) ROA	0.016	0.042*	-0.003	-0.001	0.023	0.025	-0.004	-0.011	-0.151***	0.332***	-0.042*	-0.655***	0.134***	0.014	-0.031	1			
(17) Tobin's Q	0.012	-0.092***	-0.060**	-0.018	-0.044*	0.082***	0.016	-0.175***	-0.092***	0.265***	-0.019	-0.211***	0.078***	-0.002	0.354***	0.519***	1		
(18) InsideOwn	-0.126***	-0.155***	-0.188***	-0.000	0.071***	-0.132***	0.385***	-0.157***	-0.067***	-0.007	0.053**	0.019	0.004	0.252***	-0.030	-0.048**	-0.019	1	

Table 4 shows the correlations between the main variables used in this paper. \*, \*\*, and \*\*\* indicate significance level at 5%, 1%, and 0.1%. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers. The variables are (1) Clawback, (2) Board Size, (3) Board Independence, (4) Board Diversity, (5) CEO Duality, (6) Institutional Ownership, (7) CEO Tenure, (8) Size, (9) Leverage, (10) Growth, (11) PastRestate, (12) Loss, (13) DACC, (14) CEO Comp, (15) RD, (16) ROA, (17) Tobin's Q, (18) Inside Ownership

### 5.3 Regression analysis

To test the four hypotheses that predict the effect of board composition on clawback adoption, this thesis uses logistic regression. Table 5 reports the results of the logistic regression. The first regression model (1) regresses clawback on just the independent variables board size, board independence, board diversity, and CEO duality, and the second regression model (2) includes the control variables, year-fixed effects, and industry-fixed effects. The pseudo-r-square of the second model is 0.40, which reveals that controlling for the influential variables, the regression model explains 40% of the sample, whereas not doing so in model one yields a lower percentage of 10%. Thereby illustrating that the second model is a better fit.

The coefficient for board size ( $\beta_1$ ) is positive and significant at a 1% level for the first model (0.241, p-value<0.01), and at a 5% level for the second model (0.253, p-value<0.05). Adding control variables results in a higher positive coefficient but decreases the significance level. Still, this result suggests that when board size increases, so does the likelihood of clawback adoption. The findings support hypothesis 1, which predicts that

*Table 5: Logistic Regression of the effect of board composition on the likelihood of clawback adoption*

	<i>Clawback</i>	
	(1)	(2)
BoardSize	<b>0.241***</b> (0.028)	<b>0.253**</b> (0.121)
BoardIndep	<b>3.256***</b> (0.542)	<b>5.618***</b> (1.799)
BoardDiv	<b>2.939***</b> (0.525)	<b>1.654</b> (1.864)
CEODuality	<b>-0.694***</b> (0.225)	<b>-0.737**</b> (0.303)
InstOwn		-1.203 (1.263)
CEOTenure		-0.057 (0.038)
Size		0.444** (0.214)
Leverage		-0.024*** (0.009)
Growth		-1.003** (0.497)
PastRestate		-0.325 (0.301)
Loss		0.016 (0.355)
DACC		-0.256 (1.344)
CEOComp		0.026 (0.026)
RD		-6.263* (3.441)
ROA		-0.030** (0.014)
Tobin's Q		0.304** (0.138)
InsideOwn		-0.016 (-0.06)
	-5.103*** (0.487)	-12.601*** (2.388)
Includes Year & Industry effects		(Yes)
Pseudo R-squared	0.0996	0.4003
Observations	1705	1344

Table 5 presents multivariate tests (Logit regressions).

Continuous variables are winsorized at 1% and 99% to mitigate the influence of outliers. All variables are described in Appendix B.

Standard errors are robust to clustering at the identifier cusip 8 and are in parentheses. \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% level.

board size is positively associated with the voluntary adoption of clawback. Therefore, hypothesis 1 is accepted. This result is consistent with the results from the correlation analysis and univariate test demonstrating respectively the significant positive relation between board size and clawback and that clawback firms are likely to have a larger board.

The coefficient for board independence ( $\beta_2$ ) is also positive and significant at the 1% level for both models (3.256 & 5.618, p-value <0.01). Adding the control variables to the regression model results in a higher positive association. This result suggests that the more independent directors there are, the higher the likelihood of adopting clawback. The findings thus support hypothesis 2, which predicts that board independence is positively associated with the voluntary adoption of clawback. Therefore, hypothesis 2 is also accepted. This result is also consistent with the results from the correlation analysis and univariate analysis showing respectively the significant positive relation between board independence and clawback, and that clawback firms are likely to have a more independent board.

The coefficient for board diversity ( $\beta_3$ ) is positive and significant at the 1% level for the first model with no control variables (2.939, p-value <0.01), but is insignificant in the second model when control variables are added to the regression. Since this coefficient of board diversity is insignificant, it is not possible to get a useful interpretation. Besides that, controlling for other influential variables results in a lower positive coefficient. Moreover, considering the average 14.1% of female directors in the sample derived from table 1, there may not be enough evidence to support the prediction of a significant positive association between gender diversity on the board and clawback adoption, given that most firms' board of directors are dominated by male directors. Therefore, controlling for other influential variables within the sample, hypothesis 3 is rejected. The result is, however, inconsistent with the results from the univariate test and the correlation analysis that present a significant association between board diversity and clawback adoption.

The coefficient for CEO duality ( $\beta_4$ ) is negative and significant at the 1% level for the first model with no control variables (-0.694, p-value <0.01), and is also negative and significant at 5% level in the second model when control variables are added to the regression (-0.737, p-value <0.05). The coefficient shows that the likelihood of clawback adoption drops by 73.7% when a CEO has dual roles. Adding the control variables to the regression model changes the negative relation in a more negative direction, but it also decreases the significance of the association. Nonetheless, it still suggests that as there are CEO dual roles, the less likely there are clawbacks in place. Thus, indicating the influence of CEO entrenchment. The results are consistent with the results found from the correlation analysis and univariate analysis, where CEO duality is negatively associated with clawback adoption. Therefore, hypothesis 4, which predicts that CEO duality is negatively associated with the voluntary adoption of clawback, is accepted.

With regards to the operational and financial performance variables, the coefficient of size is positive and significant at a 5% level, which implies that when firms are bigger, the chance increases of them having clawback in place. The coefficient of leverage, however, is negative and significant at the 1% level, indicating that the higher a firm is levered, the lower the likelihood of them adopting clawback. The coefficient of ROA is also negative and significant at a 5% level. Both the leverage and ROA, which measures the financial performance of a firm, are negatively associated with clawbacks. This can be due to the rise in CEO opportunism because of the pressure to meet earnings benchmarks (Heflin & Hsu, 2008). Moreover, Lougee and Marquardt (2004) provide evidence that higher leverage firms are associated with a higher degree of earnings management, which may result in these firms choosing not to adopt clawback.

Furthermore, the coefficients of institutional ownership, past restatements, DACC, and insider ownership are all negative and insignificant, while the coefficient for Loss is positive and insignificant, thereby not resulting in a useful interpretation for these variables. Focusing on other firm-level characteristics, the coefficient for Growth is significantly negative, indicating that the sales growth has a negative influence on clawback adoption and thus suggest that firms growing in sales are less likely to adopt

clawback. This result is consistent with the univariate test and the correlation analysis. A logical reason for this negative association can be due to the high level of earnings manipulation by executives, regarding sales (Beneish, 2001).

Although there is a negative association between growth and clawback, the results show a significant positive influence of Tobin's Q on clawback at a 5% level, indicating the positive relation between growth opportunities of a firm and the decision to adopt clawback provision. This may be conflicting with Babenko et al. (2017) who find evidence of the presence of clawback adoption when a firm has fewer growth options with the argument that the suppressive effect of clawback on risk can be damaging for managerial incentive to take risks on behalf of shareholders. However, consistent with the notion from Skinner & Sloan (2002) that firms with growth opportunities can be penalized more when there is earnings management to meet the earnings threshold may argue the adoption of clawbacks.

The coefficient for R&D is negative and significant at a 10% level, suggesting that firms with a higher expense on R&D are less likely to have clawback in place, thereby showing the negative association between the complexity of the firm and their decision to adopt clawback. According to Lara et al. (2016), R&D expenditures are frequently used as a tool for executive opportunism, thereby signifying fewer clawbacks in place.

Overall, most of the coefficients of the control variables are significant, thus revealing that they do help in making sure the influence of board composition on clawback is investigated. The findings in the empirical analysis are similar to the findings of prior research that shows the significant positive association of clawback with strong internal corporate governance mechanisms like board size and independence, and the negative association with CEO entrenchments such as CEO Duality and CEO tenure (Babenko et al., 2017; Chen & Vann, 2017; Hsu et al., 2018).

## 6. Conclusion

This last chapter provides the conclusion of this research. Section 6.1 discusses the main results and answers the research question from chapter 1. Section 6.2 then provides a set of limitations and addresses suggestions for future research.

### 6.1 Conclusion

This thesis aims to examine the effect that the board of directors can have on the decision to adopt clawback. While there are many indications of the consequences of clawback in prior research, there is little research on the determinants, and, as clawbacks are still voluntary and the board of directors has managerial discretion on the decision-making in a firm, their characteristics may play a role in whether a firm has clawback in place or not (Velte, 2020). This thesis aims to investigate this by answering the following research question from chapter 1: *Does the composition of a board of directors influence the voluntary adoption of clawbacks?*

To answer this question, this thesis operationalizes board composition by the size of the board, the independence of the board, the gender diversity present on the board, and the dual roles of a CEO, and then hypothesizes the influence of each characteristic on the voluntary adoption of clawback adoption. The results presented in this thesis provides significant evidence that board size and board independence have a positive influence on clawback adoption. It further provides significant evidence that CEO duality has a negative influence on clawback adoption. However, when accounting for influential factors, it does not provide significant evidence of the influence of board diversity on clawback adoption. Thereby revealing that, within the sample of 1705 US-listed firm-year observations between 2007-2016, the board size, board independence and CEO Duality do influence the voluntary adoption of clawbacks, while board diversity does not provide enough evidence for such.

Additionally, the thesis provides significant evidence of the positive association between the size and growth opportunities of a firm and clawback adoption, the negative

association between high levered, profitable, and complex firms with clawback adoption. Regarding CEO Tenure, instances of net income loss, institutional ownership, inside ownership, a history of past restatements and discretionary accruals, this thesis does not provide significant evidence of their association to clawback adoption. Despite this, the regression model still, however, explains a reasonable 40% of the sample.

This thesis contributes to the corporate governance literature by analysing the impact of determinants of corporate governance such as the role of the board of directors. It contributes to a better understanding of whether the characteristics of a board can influence policies that allow firms to recoup compensation from managers for financial misreporting. The findings provide practitioners with new insights into underlying motives for clawback adoption, thereby shedding light that the contribution of clawback as an incentive-alignment tool may be dependent on the composition of the board of directors, and thus contributing to the growing literature of clawback provisions. Velte (2020) suggested this possibility, and this thesis empirically investigated that possibility, confirming its significance. Not to mention that it also adds relevance to the debate about mandatory clawback implementation.

## **6.2 Limitations and suggestions for further research**

This thesis is subject to several limitations regarding the internal and external validity of the research. First, the control variables included in this thesis are based on prior academic literature and theories. I included a reasonable amount of control variables that result in an  $R^2$  of 40%, but, given that it is less than half of the variation, there can be other confounding factors that can influence this research and increase the explanatory power of the model. These can be the other variables that measure the diversity on a board rather than just gender, such as age, ethnicity, and even education. Especially given that the sample covers a mere 14.1% of diversity which then led to an insignificant result. Controlling for this can verify if the result holds or not. Additionally, because of the data availability of clawback, this research was limited to a sample size of 9 years (2007-2016). This could bias the results and limit their validity. For future research, adding more



control variables and increasing the sample size to increase the explanatory power and the generalizability of the sample might increase the internal and external validity.

Secondly, the research focuses solely on the clawback of US-listed firms. The result of this cannot be generalized to other countries. Moreover, it focuses on the voluntary adoption of clawback through which the results cannot be interpreted in a setting of mandatory adoption. Therefore, I suggest further research in these other settings to determine whether the results hold.

Thirdly, Erkens et al. (2018) find evidence that the strength of clawback plays a role in the decision to adopt clawback. This thesis, however, due to scope and availability, did not consider this aspect. This might have led to a more accurate result on the determinants of clawback adoption as it may also be a determining factor of the reason the board of directors choose to implement clawback. Therefore, I suggest also accounting for the strength of clawback in this research setting for future research.

Another limitation is that this thesis did not employ robust analysis such as the propensity score matching method to match treatment and control group of clawback based on the board characteristics. Doing so might have generated more accurate results. Additionally, to avoid reducing the sample, this thesis presumes that there were no clawbacks for firms before their initial adoption in the sample. This is consistent with the findings of prior research that the clawback adoption rate remained low until the year 2007 (Chan et al., 2012; Iskandar-Datta & Jia, 2013). However, a possible consequence of this is the misconception of clawback adopters vs non-clawback adopters, which can bias the results. Accounting for this in future research might lead to more accurate results.

Lastly, this thesis might be subject to measurement bias arising from the construct of variables in STATA. There are various methods of constructing a variable based on the chosen measure that might yield different results. Addressing other methods of constructing variables is a suggestion for further research.

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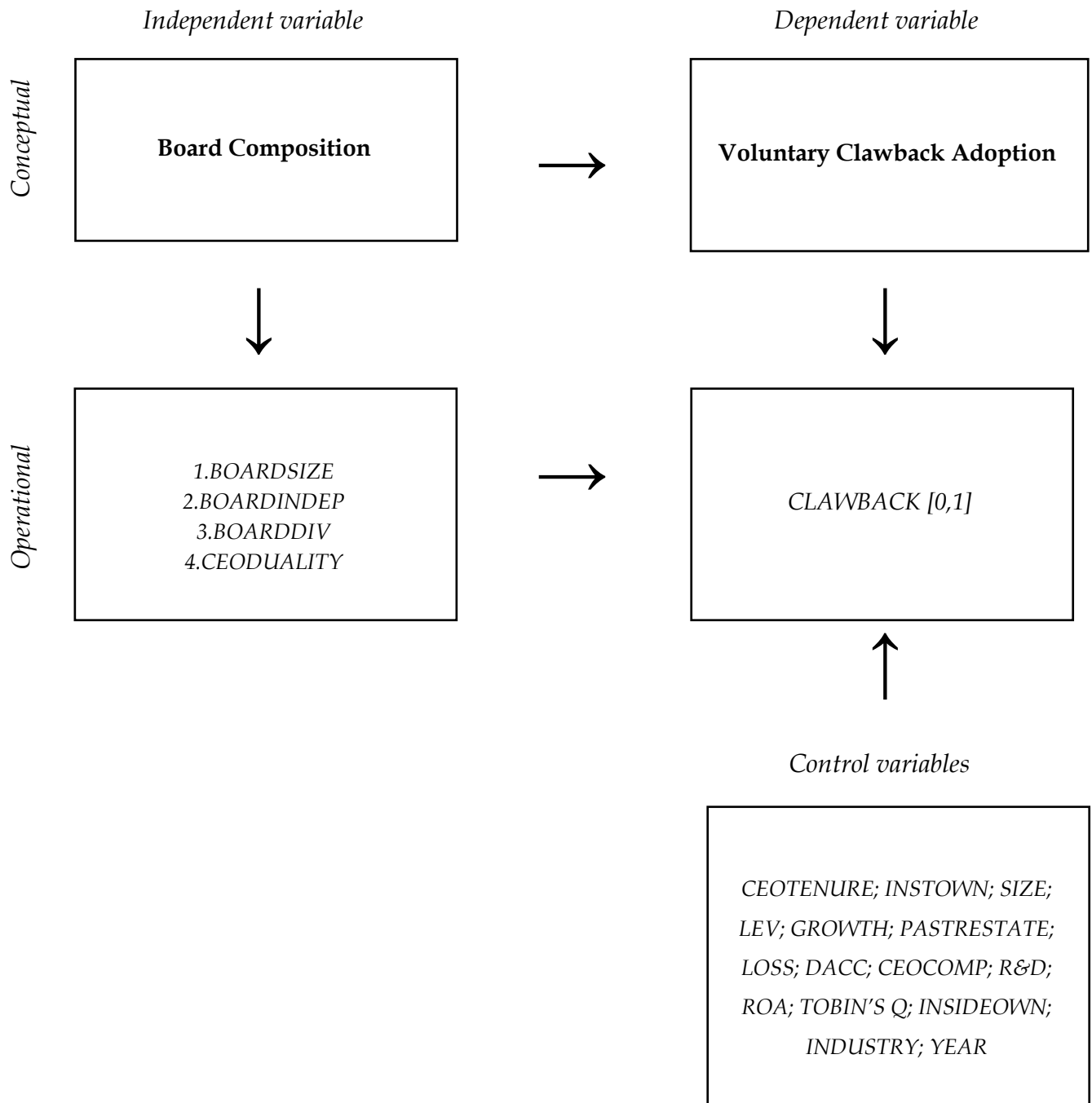
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# Appendix

## Appendix A: Predictive Validity Framework





## Appendix B: Variable Definitions

Variable	Description	Data Source
<i>Dependent variable</i>		
CLAWBACK	Binary variable that equals 1 if firms have a clawback provision in place, and 0 if the firm does not have the provision	Ying Gan/Michael Erkens
<i>Independent variables</i>		
BOARDSIZE	Number of directors on the board	ISS
BOARDINDEP	Percentage of independent directors on the board	ISS
BOARDDIV	Percentage of female directors on the board	ISS
CEODUALITY	Binary variable that equals 1 if CEO of firm is also the chair, and 0 otherwise	ISS
<i>Control variables</i>		
CEOTENURE	CEO's tenure (in years)	Execucomp
INSTOWN	Percentage of shares held by institutional investors	Thomson Reuters
SIZE	The natural logarithm of total assets	Compustat
LEV	Long term debt divided by total assets	Compustat
GROWTH	The sales of a firm compared to the previous year	Compustat
PASTRESTATE	Binary variable that equals 1 if the firm had any financial restatements in the past 3 years and 0 otherwise	Audit Analytics
LOSS	Equals 1 if the firm reports a net loss in the period, and 0 otherwise.	Compustat
DACC	Absolute value of abnormal accruals	Compustat
CEOCOMP	Natural Logarithm of Total CEO compensation, which includes the base salary, other compensation, the bonus, stock and option awards, other non-equity incentive compensation and pension compensation.	Execucomp

<i>R&amp;D</i>	Research and development expenditures divided by total sales	Compustat
<i>ROA</i>	Income before extraordinary items divided by lagged total assets	Compustat
<i>TOBINS'Q</i>	Market value of Equity divided by the total assets	Compustat
<i>INSIDEOWN</i>	Percentage of shares held by top management	Execucomp
<i>INDUSTRY</i>	Industry-specific effects	
<i>YEAR</i>	Year-specific effects	

## Appendix C: Sample Selection Procedure

<b>Data Selection</b>		
<b>Selection from Clawback Dataset (2007-2016)</b>		
Number of observations from clawback dataset		4870
Drop missing cusip 8 observations		0
Drop duplicates		0
Final number of observations		4870
<b>Selection from ISS Dataset (2007-2016)</b>		
Number of observations from clawback dataset		139073
Drop missing cusip 8 observations		-187
Drop duplicates		-124065
Final number of observations		14821
<b>Selection from Compustat Dataset (2006-2016)</b>		
Number of observations from clawback dataset		137114
Drop missing cusip 8 observations		-115
Drop duplicates		-13427
Drop year 2006		-10873
Final number of observations		112699
<b>Selection from Execucomp Dataset (2007-2016)</b>		
Number of observations from clawback dataset		117390
Drop missing cusip 8 observations		0
Drop duplicates		-95877
Final number of observations		21513
<b>Selection from Audit Analytics Dataset (2007-2016)</b>		
Number of observations from clawback dataset		120815
Drop missing cik observations		0
Drop duplicates		-4954

Final number of observations		115861
<b>Selection from Thomson Reuters Dataset (2007-2016)</b>		
Number of observations from clawback dataset		417658
Drop missing cusip 8 observations		0
Drop duplicates		-292080
Final number of observations		125578
<b><i>Merging Process</i></b>		
<b>Compustat - ISS with CUSIP8 &amp; firm-year</b>		
Number of observations after merging Compustat with ISS		115286
Drop unmatched observations		-103048
Drop duplicates		0
Final number of observations COMP-ISS		12238
<b>Execucomp - Thomson Reuters with CUSIP8 &amp; firm-year</b>		
Number of observations after merging Execucomp with Thomson Reuters		130393
Drop unmatched observations		-113695
Drop duplicates		0
Final number of observations EXE-TR		16698
<b>Compustat - ISS - Execucomp - Thomson Reuters with gvkey &amp; firm-year</b>		
Number of observations after merging COMP-ISS with EXE-TR		16945
Drop unmatched observations		-4954
Drop duplicates		0
Final number of observations COMP-ISS-EXE-TR		11991
<b>Compustat - ISS - Execucomp - Thomson Reuters - Audit Analytics with cik &amp; firm-year</b>		
Number of observations after merging COMP-ISS-EXE-TR with Audit Analytics		115922

Drop unmatched observations		-104021
Drop duplicates		0
Final number of observations COMP-ISS-EXE-TR-AA		11901
<b>Compustat - ISS - Execucomp - Thomson Reuters - Audit Analytics - Clawback with CUSIP8 &amp; firm-year</b>		
Number of observations after merging COMP-ISS-EXE-TR-AA with Clawback		14619
Drop unmatched observations		-12467
Drop duplicates		0
Final number of observations COMP-ISS-EXE-TR-AA-CB		2152
<b>Cleaning Merged Data Sample</b>		
Number of observations of COMP-ISS-EXE-TR-AA-CB		2152
Drop firm years of financial industry (SIC: 6000-6999)		-444
Drop duplicates		0
Drop missing observations		-3
Final number of observations Merged Data Sample		1705
<b>Final Sample</b>		
Total of clawback adopters		889
Total of non-clawback adopters		816
Total sample of clawback and non-clawback adopters		1705