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Board diversity on earnings management

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Abstract

This thesis examines the relationship between ethnic board diversity and earnings management for U.S. listed firms. A board is ethnic diverse if at least one member is non-Caucasian. To proxy for earnings management, I use accrual based earnings management and real activities earnings management. While prior research mainly focus on the relationship between gender and ethnic diversity on earnings management, will I only focus on ethnic diversity. After controlling for size, year, industry, and other corporate governance measures, I find significant evidence that ethnic board diversity contributes to reducing accrual based earnings management. However, I do not find evidence that ethnic board diversity contributes to reducing real activities earnings management. Moreover, the critical mass theory, that you need at least three or more diverse board members to perceive influence, does not keep stand.

Keywords: Board diversity, Corporate governance, Earnings manipulation, Ethnicity

Content

1. Introduction

1.1 Background

Due to the exposure of various accounting scandals at the beginning of 2000, including Adelphia, Enron and WorldCom and the advent of the financial crisis in 2008, the integrity and credibility of financial reports has come under more attention. Earnings are often seen as financial performance metrics of the firm; it may therefore be attractive to the management of opportunistic behaviour by manipulating earnings. To prevent these scandals good corporate governance controls are necessary and questions can be raised how to improve corporate governance controls (Larcker & Tayan, 2016).

Despite the debates from researchers about the effects of board diversity on financial reporting quality, so does the corporate world see the benefits. For example, the United Kingdom Corporate Governance code states that:

'' Essential to the effective functioning of any board is dialogue which is both constructive and challenging. The problems arising from 'group-think' have been exposed in particular as a result of the financial crisis. One of the ways in which constructive debate can be encouraged is through having sufficient diversity on the board. This includes, but is not limited to, gender and race. (Financial Reporting Council, 2016)''

Academia and policymakers mainly focus on board gender diversity. This is apparent from, among other things, the quotas that have been set. Norway was the first country to introduce a gender quota for the board of directors in 2003. At least 40% of board of directors of a public listed firm should be a female. Spain followed in 2007 and France in 2010. Moreover, the paper of Larcker and Tayan (2016) provided evidence board gender diversity results in stronger control.

Ethnic minorities are still underrepresented on corporate boards. In the year 2020, only 10 percent of all S&P 500 companies were headed by a CEO from a historically underrepresented ethnic group (Spencer Stuart, 2021). Also, only 21 percent of executives come from ethnic minorities, while these groups make up 42 percent of the US population. The S&P 500 has reached a milestone in 2020 with more than 30 percent women on boards for the first time (Spencer Stuart, 2021).

In the same annual survey of Spencer Stuart (2021) reported 39% of the boards having a policy to include people from an ethnical minority in their pool of candidates when recruiting new board members. Even though firms and policymakers consider board ethnic diversity important, have it not been examined so often. Therefore, this thesis will examine the effect of ethnical board diversity on earnings management.

Looking at it from a theoretical perspective, three effects can arise from ethnical board diversity on the degree of earnings management, namely a positive effect, none or a negative effect. According to the paper by Adams and Ferreira (2009) ethnical board diversity can lead to an improvement of monitoring and quality of decisions by the board. However, in practice these differences need not to apply. A through screening applies to the appointment of a board member (ethnical diverse or not), which can lead to an ethnical diverse member with the same

characteristic as a non-diverse member. The differences can also lead to a conflict between board members, resulting in a less efficient degree of monitoring.

Several studies have examined the effect of ethnic board diversity on firm performance (Carter et al. (2003), Carter et al. (2010) and Miller and Triana (2009)). The paper of Carter et al. (2003) states that board diversity is important for the monitoring function of a board and causes a positive effect on Tobin's Q and a positive relationship between minority directors and firm performance (Miller and Triana, 2009). Meanwhile, Carter et al. (2010) does not find a relationship between either measures.

1.2 Research question

Since the different outcomes may arise from ethnic board diversity on earnings management, the following research question has been formulated:

"What is the effect of board diversity on earnings management?"

To answer this research question, one type of proxy for board diversity will be used, namely ethnic diversity in boards. The diversity of a board can be determined by examining ethnicity from the members as an independent variable. First, only the effect of diversity in a board is investigated. Thereafter, the effect of high or low ethnical board diversity is investigated. For the dependent variable, earnings management, I use four different models to estimate the amount of accrual based earnings management and real activities earnings management.

After the selecting and merging process, a final sample of 9,116 firm-year observations was left. Only U.S. listed firms are used in the period from 2007 to 2020. I use a multivariate regression model with as independent variable ethnicity measured in four different ways and to proxy for earnings management, I used four different models. The primary findings of this thesis indicates that ethnic board diversity contributes to reducing accrual based earnings management. However, I do not find evidence that ethnic board diversity contributes to reducing real activities earnings management. Furthermore, I do not find evidence that supports the critical mass theory by Kramer and Konrad (2008).

1.3 Relevance

This paper contributes to the current literature regarding financial reporting quality. This paper focus on board diversity in a different way than the current literature, namely on ethnical board diversity instead of gender board diversity. Where the current literature (Campbell & Mínguez-Vera (2008), Carter et al.(2003), Carter et al. (2010), Erthardt et. al (2003)) mainly focus on board diversity and firm performance, will this paper examine the effect of board diversity on earnings management. Moreover, this paper looks as well to ethnical diversity and the effect on earnings management, while most current literature investigate the effect of gender on earnings management.

It is also societal relevant as it contributes to the ongoing discussion about the necessity of more diversity in the board of directors. If there is a relation between board diversity and financial reporting quality, board members can compose boards based on it characteristics. Especially for shareholders it is relevant to know, if it affects their interest, they can act on it. Besides, it

can be relevant for auditors, if there are certain board compositions, they should pay more attention to earnings management.

1.4 Thesis structure

This thesis is organized as follows: in section two the main literature is reviewed. Hypotheses are formulated in section three based on the literature review. The research design for the empirical research is described in section four. Section five describes the results of the empirical research and additional tests, followed in section six with the conclusion and any shortcomings of the research.

2. Literature review

This chapter will discuss about the most relevant concepts, theories, and literature related to the topic board diversity on earnings management. It is divided in four different parts. First, the literature regarding earning management is discussed. Secondly, the literature regarding board of directors is discussed. In the third place, literature concerns ethnicity and its advantages and disadvantages. Lastly, the existing literature on the relation between earnings management and board of directors is discussed.

2.1 Earnings management

2.1.1 What is earnings management

There is no single definition for earnings management in the current literature, but researchers all use their own established definition. Where these definitions differ are the motives for committing financial reporting manipulation to achieve specific targets. Schipper (1989) defines earnings management as purposeful intervention in external financial reporting process to achieve private benefits. An example of a private benefit is obtaining a bonus for meeting targets.

Healy and Wahlen (1999) expends the definition of Schipper (1989) by adding that earning management occurs to either mislead some stakeholders or influence contractual outcomes. Since the definition of Healy and Wahlen (1999) is the most common definition for earnings management, here is the exact definition from their paper:

"Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial report to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."

The accounting numbers should be a faithful representation of reality, however earnings can still take place. This is due to incomplete contracts that give managers flexibility in their accounting choices, selective information communication by managers to stakeholders and limited capabilities from stakeholders to understand management refined decisions. through the separation of ownership and control (Healy and Wahlen, 1999). This separation makes owners less informed than executive managers and allows managers to commit earnings management. There is information asymmetry between the two parties. To reduce information asymmetry, listed companies are required to provide a certain amount financial information to stakeholders

(Beyer et al., 2010). These earnings must be a true representation of reality. However, this is not always the case due to earnings management.

2.1.2 Incentives for earnings management

Managers can have many different reasons for applying earnings management, but Healy and Whalen (1998) distinguish three different motives, namely capital market motive, contractual motive and regulatory motive.

The first motive is called the capital market motive. According to Healy and Whalen (1999), investors and financial analysts use financial information to determine the value of a company and thus the value of the stock. By influencing the financial information by managing earnings, a manager can influence the short-term value in the desired direction, both positively and negatively. Improving a company's financial performance can make more investors willing to invest in the company. There have been several studies of this motif (DeAngelo (1986) and Burgstahler and Eames (2006)). The DeAngelo (1986) study examined whether there is a relationship between earnings management and management buyout. The results showed that there is a relationship between management buyout and earnings management. Managers have an incentive to undervalue financial performance to negotiate a lower price for the stock. The research by Burgstahler and Eames (2006) shows that managers manage financial performance to avoid negative surprises for financial analysts.

The second motive for manging earnings is because of a contractual motive (Healy and Whalen, 1999). Stakeholders use financial data of a company when granting loans. This is laid down in debt covenants and the issuing party may require certain accounting figures to ensure that the obligation is repaid in full. If managers do not meet this expectation, penalties may follow, but the manager can manage earnings so that the contract is still fulfilled. Another form of contracts leading to earnings management is the reward contract of managers. This is given to solve the agent-principal problem and can lead to managers managing earnings to meet the requirements of the contract to receive the bonus.

The last motive to manage earnings is because of regulations. In this, Healy and Wahlen (1999) distinguish between two different regulations. The first is industry regulation. Companies may have to deal with regulations that a company must have certain accounting values. An example is that banks have regulations that they must have a minimum amount of capital. For managers, this can be an incentive to manage earnings to meet them. The second regulation is the competition regulation. If companies want to claim certain subsidies or quotas from the government, certain conditions may be attached to this. In this way a maximum profit or maximum turnover can be determined. To fulfil these conditions, a manager can use earnings management.

2.2 Types of earnings management

Managers can manipulate their earnings in different ways. The two most common are accrual-based earnings management and real activities earnings management. Accrual based earnings management is done through the manipulation of discretionary accruals by choosing certain accounting policies of the managers and has no direct effect on cash flow (Dechow et al., 1995). Meanwhile, real activities earnings management earnings are managed through deviation of the

normal operating activities, which aim to advance earnings. (Zang, 2012, Roychowdhury, 2006). This has a direct effect on the cash flow.

2.2.1 Accrual based earnings management

One way to manage earnings is through accrual based earnings management. In this form of accrual manipulation, discretionary accruals are managed through certain choices in accrual accounting. Examples of accrual manipulation are certain inventory valuation methods and deprecation rates. By manipulating discretionary accrual, which occur when revenue or expenses are recorded in stead when the payment is received, this form of earnings management is possible.

For accrual based earnings management, a distinction is made between two different accruals, discretionary accruals and non-discretionary accruals. The important difference between these two accruals is that discretionary accruals are seen as the accruals which are managed by the managers. These can be managed by making certain accounting choices. An example of a discretionary accrual is the choice of a certain depreciation method. Non-discretionary accruals are accruals that are driven by an economic activity and is the unmanned portion of the accrual. (Dechow et al., 1995).

There have been several models for determining the discretionary accruals. Dechow et al. (1995) compared and discussed 5 different models, namely Healy model (1985), DeAngelo model (1986), Industry model (1991), Jones model (1991) and the modified Jones model (1995). The results of the study show that all models work well, but the most explanatory model is the modified Jones model. Therefore, I will use the Modified Jones Model. This model splits accruals in non-discretionary accruals and discretionary accruals. The model uses accrual drivers, such as sales, sales on account and property, plant and equipment (PPE), to determine which accruals are non-discretionary and which are discretionary. By using these accruals drivers, the change in working capital and long-term accruals can be captured.

2.2.2 Real activities earnings management

Another form of earnings management is real activities earnings management. According to Roychowdhury (2006), real activities earnings management is deviations from normal operating activities with the aim of making stakeholders believe that financial reporting goals have been achieved. It enables managers to achieve reporting goals that do not necessarily add to firm value. Examples of real activities earnings management are price discounts and reduction of discretionary spending. If managers engage in such practices more than in the normal course of operation, it is called real activities earnings management.

As in the study of Dechow et al. (1998) a distinction is made between three different ways of manipulation and the effects of manipulation on abnormal values of surgery. The first form of manipulation is in sales manipulation. Managers can temporarily stimulate sales by giving discounts. By giving time-limited discounts, managers can push sales from the next fiscal year to the current fiscal year. In the current period, sales rises due to the discount, but in the period where the old prices are used without discount, there will be a drop in sales. On the short run, earnings rise, but in the long run margins drop and earnings will be lower. By using a lower price, the margins are lower, which in the long term results in a lower cash inflow per sale. The second form of manipulation is reduction in discretionary spending. Discretionary expenses

should in principle be booked in the same year in which they arise. By reducing discretionary expenses, such as research and development and advertising costs, in the current period, firms have higher earnings in the current period. When managers adopt this approach to earnings management to achieve earnings targets, these firms have unusually low discretionary expenses. The last manipulation described by Dechow et al. (1998) is overproduction. If companies produce more than expected demand, the fixed overhead costs can be divided by a higher number of units. This results in a decrease in total cost per unit, resulting in lower reported COGS and higher operating earnings in the fiscal year. Ultimately, the other production costs per unit become more expensive in the following years, because less production is required.

Since a distinction is made between three different ways of real activities earnings management, all three ways are measured. The real activities earnings management models of Dechow et al. (1998) are used for this. These models approximate the amount of abnormal cash flow, abnormal discretionary expenses, and abnormal production costs. These models indicate for each way of real activities earnings management whether earnings management is involved.

2.2 Board of directors

The board of directors form a group of directors which are elected by the stakeholders as representatives for them. According to the Organization for Economic Co-operation and Development, the board of directors is responsible for a strategic guidance for the company, effective monitoring of the management and where the board is accountable to the company and its stakeholders. (OECD, 2004). Despite the many overlaps, a clear distinction is made between the two different functions of the board, namely an advisory and a supervisory function (Lacker & Tayan, 2011). The task package of the advisory role is to support management with the choices in the operational and strategic course of the company. The oversight function is in the interest of the shareholders and means that the board checks with management whether the actions taken are in the interest of the shareholders and not in their own interest. Board members are mainly hired on the basis of their skills and expertise in the relevant sector acquired in previous positions and this benefits the advisory role of the board (Larcker & Tayan, 2011).

To ensure a good corporate governance environment, board members are expected to be independent. This is because board members should be able to take positions against managers if necessary. If they can not fulfil this requirement, the can start acting out of self-interest in stead of act solely in the interest of the firm. (Larcker & Tayan, 2011). Independent boards are better able to limit the ability of managers to commit opportunistic actions, which result in a better quality of reporting and firm performance (Klein, 2002; Xie et al., 2003; Larcker et al., 2007; Srinidhi et al., 2011) The characteristics of a board can influence the choices made by the manager in their operating, investing and reporting decisions (Srinidhi et al., 2011). These characteristics can be measured by external observers. According to Fields et al. (2003) board diversity can influence decisions made by the board, due to a difference in experience and knowledge from individuals. But what makes a board of directors diverse?

According to Coffey and Wang (1998) is board diversity the variation of members of a board. The variation can be observable, but it is not necessary. Observable difference can be age, gender, nationality or race. However, there are unobservable differences that make a board

diverse, such as age and gender, and there are less observable differences that make a board diverse, such as experience, ethnicity or cultural beliefs.

Prior research shows that a more diverse board is better able to compassionate the voice of stakeholders (Rose, 2007). Moreover, a diverse board has a greater knowledge base, more innovative and creative (Erhardt et al., 2003). According to Man and Wong (2013) can board independence improve the monitoring of managers. The better monitoring of managers lead to less opportunistic behaviour of managers and less opportunistic behaviour lead to lower earnings management.

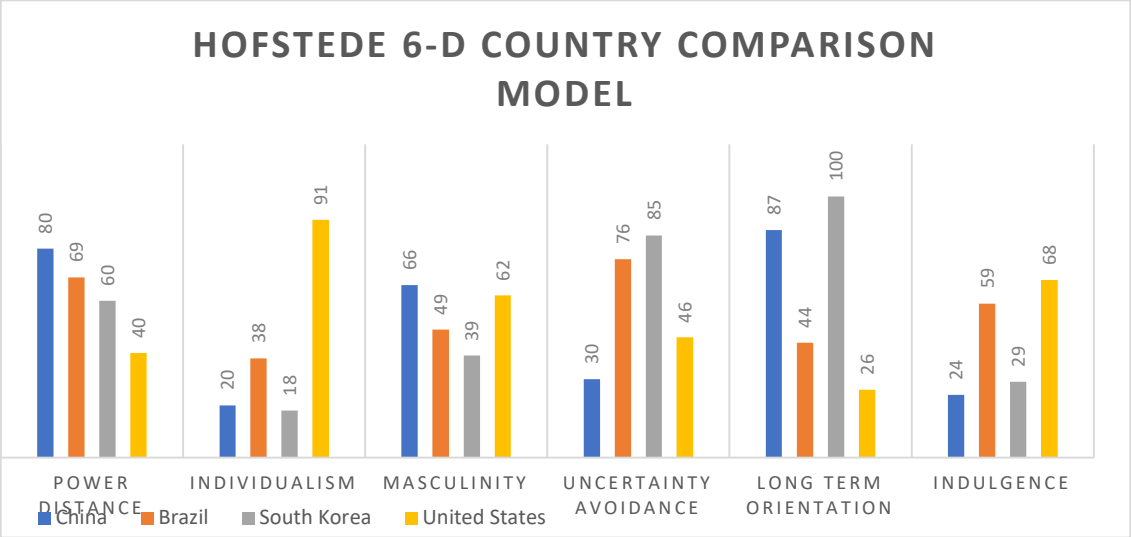
According Cox and Blake (1991), board diversity brings also competitive advantage. They gave six different arguments: 1) Cost argument, diverse firms experience a lower turnover among women and ethnic minorities 2) Resource-acquisition argument, diverse firms are better able to attract women and ethnic minorities as employee 3) Marketing argument, different cultural insights should improve the marketing, as diverse members have different demographic information for the market they serve 4) Creativity argument, diverse individuals brings diverse backgrounds, which can bring innovative ideas 5) Problem-Solving argument, heterogenous board are produces better decisions, due to wider range of perspectives and has a more critical analysis 6) System flexibility argument, organisations with a diverse board tend to be more fluid and flexible and are better able to react in uncertain situations.

2.3 Ethnicity

Ethnicity is used in a way to identify and group people based on shared characteristics, such as ancestry. On the other hand, there is culture, which is a way of life for a particular group of people, including customs, beliefs, values and traditions. These concepts are often intertwined, as people of the same ethnicity often share a common culture. Ethnicity and culture may change over time and can influence each other. However, people of the same ethnicity may share similar customs, beliefs, values and traditions, that have been passed through generations. As the culture of a person is hard to determine, ethnicity is used to group people based on shared characteristics.

Hofstede (2010) has investigated the influence of culture on workplace values and its social consequences. This was done by setting up the 6-D model, which looks at six dimensions of national culture (on a scale from 0 to 100). The following dimensions are used for this: power distance index, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance index, long term orientation versus short term normative orientation and indulgence versus restraint. The power distance index is an indicator that reflects society's acceptance that power is unequally distributed between powerful and less powerful people. Individualism versus collectivism measures the tendency of a society whether there is a communal feeling (the collective) or an individual feeling (the individual comes first). Masculinity versus femininity represents whether a society is more competitive or consensus-oriented. Uncertainty avoidance index, is an index that express the degree of members of the society feel comfortable or uncomfortable with uncertainty. This is an indexation of whether a society should want to control the future or just let it happen. Long term orientation versus short term orientation is an indicator for how a society links their own past with the challenges of today and tomorrow. A low score on long term orientation versus short term orientation indicate that a society prefer time-honoured traditions. Indulgence versus restraint indicate whether a society prefer strict

social norms or allows relatively free gratification of basic and natural human drives related to enjoying life and having fun.



Hofstede (2010) used for his 6-D model 70 countries, who were surveyed in the period 1967-1973. To make a comparison that culture differs and can therefore have an influence, I compare the results of the countries United States, Brazil, China and South Korea. Major differences can be observed. The United States scores lower on power distance compared to the other countries. Inequality amongst people are less accepted compared to the other countries. In contrast, China scores high, which means that inequality between managers and employees is high. The biggest difference between the United States and the other countries is in the individualism dimension. The United States scores high, what is known that they attach great importance to their own interest and not the common collective. Meanwhile, the Asian culture places great value on the collective. China and South Korea score relatively low on individualism. In terms of the masculinity dimension, China and United States have a greater drive to achieve success compared to Brazil and South Korea, but the differences are not large. With a long-term orientation, a clear distinction can be seen between asian (China and South Korea) and non-Asian (Brazil and US) countries. This indicates that Asian culture attaches great importance to the past. With indulgence, there is a difference between the Asian culture and non-Asian culture, where the Asians are more restrained by social norms.

Having different ethnicity creates different national cultures that contribute to individual behaviour (Han et al., 2010). The cultural norms and values that individuals acquire at a young age through parents and society are difficult to change and give each individual their own norms, values and character traits. Ethnic origin therefore contributes to the formation process and ensures different norms, values and character traits (Hofstede, 2010).

Ethnicity plays a role on culture and character. Moreover, research on the effect of different cultures on earnings management shows more individualistic countries tend to be more opportunistic than non-individualistic countries (Doupnik, 2008; Han et al., 2010; Gray et al., 2015). These countries are more inclined to bring forward accruals and conduct earnings management.

2.4 Board diversity and earnings management

Despite that the two most sought-after groups are ethnic minorities and women, little research has been done on ethnic board diversity on earnings management (SpencerStuart, 2021). Based on prior research, ethnicity can play a significant role on firm performance (Carter et al. (2003) & Erhardt et al. (2003)). Carter et al. (2003) found a significant positive relation between firm value and diversity in ethnicity among board members. Still in 2020, 10 percent of all S&P 500 companies were headed by a CEO from a historically underrepresented ethnic group (Spencer Stuart, 2021). The paper of Erhardt et al. (2003) found similar results as Carter et al. (2003). A potential reason for an increase in firm performance is that ethnic diverse boards do not share the same background or school relationship. Meanwhile, the paper of Carter et al. (2010) show an insignificant result of a diverse board (ethnic and gender) on firm performance.

The paper of Tee and Rassiah (2020) shows that boards with higher ethnic diversity are associated with higher earnings quality. Moreover, they suggest that institutional investors prefer more ethnic diverse boards. They used a sample consisting of Malaysian firms in the time period 2002-2012. They use discretionary accruals as a proxy for earnings management.

3 Hypotheses development and sample

3.1 Introduction

This chapter discusses the hypotheses. The hypotheses have been established on the basis of the literature review. First, the motivations for the hypotheses are given, followed by the hypotheses. The hypotheses are based on the research question:

"What is the effect of ethnic board diversity on earnings management?"

3.2 Motivations and hypotheses

Diversity on the board of directors is not yet self-evident, despite the fact that more than 50 percent of companies have policies regarding ethnic diversity when selecting new candidates for the board of directors (SpencerStuart, 2021). SpencerStuart's (2021) study shows that only 21% of all board members of S&P500 boards represent an ethnic minority. At the same time, a survey from the National Association of Corporate Directors (NACD) among board members claims that in today's business landscape, at least 75 percent of the directors believe that ethnic and gender diversity should be a critical factor in board composition (Larker & Tayan, 2011).

In the current literature on ethnic board diversity, the idea arises that it can contribute to improving the independence of the board and thus a reduction in earnings management. Board diversity ensures greater knowledge, creativity and innovation in the board (Erhardt et al., 2003) and the board benefits from diversity for the monitoring function of the board (Carter et al., 2003). Due to a difference in background and demographic with a non-diverse director, a diverse director have a broader view. Moreover, not sharing the same background, school relationships, affiliations or religion increases the independence of boards (Choi & Min, 2012).

Having different ethnic board members contributes to different national cultures and thus different individual characteristics (Han et al., 2010). These individual characteristics can contribute to behaviour and caution in the way of driving. Hofstede Insights' research into the effect of different national cultures on the work floor shows that the United States scores high on individualism. In addition, the study by Han et al. (2010) suggests an association between cultural values and earnings management and that individualistic countries are more likely to adopt aggressive accounting practices and positively manage earnings.

Given that ethnic boards are more independent than non-ethnic boards and ethnic individuals have characteristics that may be less consistent with aggressive accounting practices, the following hypothesis has been formulated:

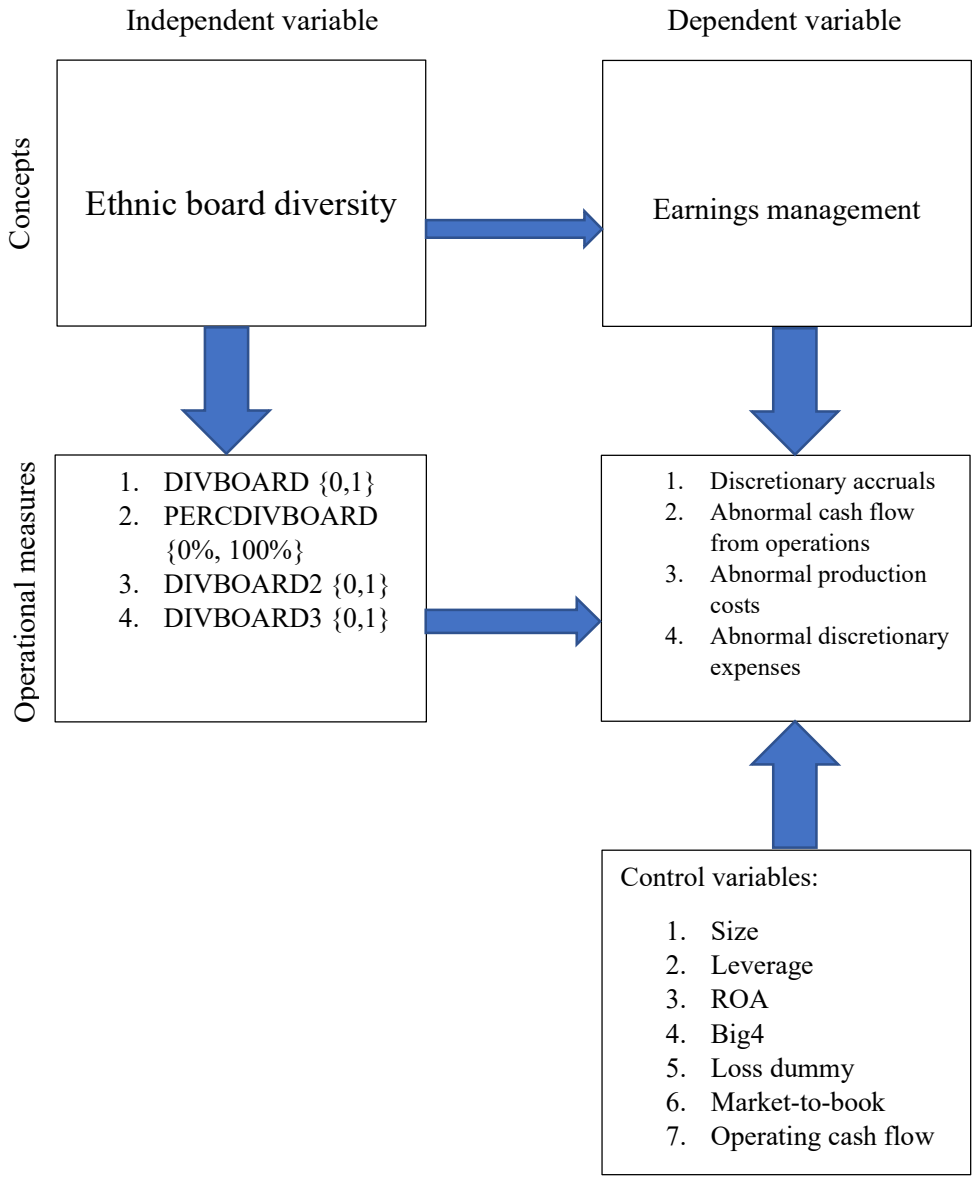
H1: There is a negative relation between earning management and firms with an ethnic diverse board

In the research of Kramer and Konrad (2008) argued that at least 3 women in the board of directors is the critical mass. As one women will be invisible, two women increased the feeling of inclusion and comfort, but the women's can still feel a barrier and three women creates that the women's are accepted and can speak freely. Although ethnic diversity is different from gender diversity, I do expect that it can form a barrier before influence is visible. Therefore, it is also being investigated whether having two or three members ethnic diverse members has a greater influence on earning management. Hence the last hypothesis:

H2: The critical mass for ethnic diversity is three or more board members

In figure 1, a representation of the predictive validity framework is shown.

Figure 1: Libby boxes



4 Research design

This chapter will discuss the sample cleaning and selection process, moreover it will discuss the research design and methodology used in this thesis. It consists in total of five chapters, where the first part will discuss the sample cleaning and selection process, the second part the dependent variables used to measure earnings management, the third part will discuss the independent variables used to measure board diversity, the fourth part will discuss the control variables used to mitigate for potential endogeneity problems and the last chapter presents the regression model used to examine the impact of board diversity on earnings management.

4.1 Sample selection and cleaning

To examine the impact of board diversity on earnings management, a quantitative study will be performed. Therefore, is data retrieved from the Wharton Research Data Service. The research will use public listed firms in the United States from the period 2007-2020. The reason for the United States and the period is because the data is possible from 2007 and there will be a large timeframe. All data is provided the university by Wharton Research Data Service. For the governance data, the Institutional Shareholder Services (ISS) database will be used. This database provides information i.e. age, race, gender, ethnicity. The financial data will be retrieved from Compustat. This data will be used for the dependent variable, earnings management, and to mitigate for endogeneity by adding control variables.

After all the data is collected, the cleaning process can start. The initial sample of Compustat consists of 151,350 firm-year observations. First, duplicates are deleted. This is done by searching for duplicates based on "cik" and "fyear", which resulted in 99,550 firm-year observations. Hereafter, all companies that lack the necessary financial data have been deleted. This resulted in 66,161 firm-year observations. Following Roychowdhury (2006), firms in the utility industry are excluded (SIC codes 4900-4999). Moreover, financial institutions are excluded (SIC codes 6000-6999) due to their different regulations and firm characteristics. Finally, companies denominated in Canadian dollars are removed, because the proportion of the earnings will differ, which results in a final-sample of 56,091 firm-year observations.

The initial dataset of ISS consists of 210,682 firm-year observations at the beginning. ISS is first checked on duplicates based on “cusip”, “fyear” and “director_detail_id” and duplicates are deleted. This results in 210,652 firm-year observations. After that, the observations where “cusip”, “fyear” and “ethnicity” are missing, are deleted. Moreover, observations where “ethnicity” is ‘UNKNOWN’ or ‘N/C’ or ‘Prefer not to disclose’ are deleted, which results in a final sample of ISS of 184,990 firm-year observations.

After all data has been cleaned, the merging of the datasets can begin. The ISS dataset is one-to-many merged with Compustat using "fyear" and "cusip". This results in a final sample of 9,116 firm-year observations.

Table 1: Sample selection

	Compustat	ISS
Begin Sample	151,350 firm-year observations	210,682 observations
Exclude duplicates	99,590 firm-year observations	210,652 observations
Exclude observations with missing values	66,161 firm-year observations	184,990 observations
Exclude utility firms (SIC: 4900-4999)	62,515 firm-year observations	-
Exclude financial firms (SIC: 6900-6999)	56,091 firm-year observations	-
Final Sample	56,091 firm-year observations	184,990 observations
Merged Sample	9,116 firm-year observations	

4.2 Independent variable

To investigate the effect of ethnic board diversity on earnings management, three different ways to measure ethnicity have been chosen. First, a dummy variable (DIVBOARD) that takes the value of 1 if at least 1 person or more from the board is non-Caucasian, if all board members are Caucasian, the dummy variable takes a value of 0. The second way to represent the degree of ethnicity is through the percentage of board members with that are non-Caucasian. This is determined by adding the number of members of the board with a non-Caucasian background and divided by the total number of members of the board (PERCDIVBOARD).

Following the research of Kramer and Konrad (2008) and Liu et. al (2014) has chosen to add a third independent variable. In these studies, research has been done into the desired extent of gender diversity to be able to exert the desired influence. This showed that women with two or more are desirable for improving firm performance. Even though this research focuses on ethnic board diversity, it was decided for this research to also investigate the effect of 2 or more board members with a non-Caucasian background and of 3 or more board members with a non-Caucasian background. For this, the dummy variables were used (DIVBOARD2 and DIVBOARD3), which take the value of 1 if a board has 2 or 3 or more board members with a non-Caucasian background.

4.3 Dependent variable

For the dependent variable, two different models are used to measure earnings management. The first model is the modified Jones model by Dechow et al. (1995) to determine accrualbased earnings management. To measure real activities earnings management, the models of Roychowdhury (2006) are used. These models estimate abnormal cash flow from operations, abnormal discretionary expenses and abnormal production cost

4.3.1 Accrual based earnings management

To engage in earnings management in to achieve personal gains, managers can use discretionary accruals. One proxy for earnings management will be discretionary accruals. Managers can control these accruals by choosing certain accounting policy (Healy and Wahlen, 1999). In the research of Healy and Wahlen (1999), they reviewed five different models to measure accrual based earnings management and they found that the Modified Jones model is the best model to estimate accruals. Therefore, to measure the discretionary accruals, the modified Jones model by Dechow et al. (1995) is used.

Below you can find the equation (1) that measure the accruals

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it}$$

The definition of the variable for the equation (1) are shown below:

TA_{it}	Total accruals for firm i in year t (Compustat: Income before extraordinary items "IB" – Net cash flow from operating activities "OANCF")
A_{it-1}	Total assets for firm i in year t-1 (Compustat: Lagged Assets - Total "AT")
ΔREV_{it}	Change in revenue of firm i between year i and t-1 (Compustat: Sales year t "SALE" – Sales year t-1 "SALE")
ΔREC_{it}	Change in receivables of firm i between year i and t-1 (Compustat: Accounts receivable – decrease (increase) "RECCH")
PPE_{it}	Gross property, plant and equipment for firm i in year t (Compustat: Property, Plant and Equipment – Total "PPEGT")
ε_{it}	Error term, proxy for level of discretionary accruals for firm i in in year t

The Modified Jones model separates total accruals into non-discretionary accruals and discretionary accruals. The coefficients determine the normal (non-discretionary) accruals in the event period. Total accruals are calculated by deducting income before extra ordinary items from net cash flow from operations activities and consists out of two parts, the discretionary accruals and the non-discretionary accruals. The discretionary accruals are the managed part of earnings and gives an indication of the accruals that are managed. The non-discretionary accruals are not managed. The more discretionary accruals deviate from zero, the more the accruals are manged, which indicate that earnings management takes place.

4.3.2 Real activities earnings management

Following on from other studies (e.g. Roychowdhury (2006) and Zang (2012)), another model is added to investigate whether real activities earnings management is being carried out. Real activities earnings management consist of three components and therefore three different equations are used. The first equation measures abnormal cash flow from operations. The second equation measures abnormal discretionary accruals and the third equation measures abnormal production expenses.

Managers can manage earnings through sales discounts and flexible credit terms. In the short term, this will increase sales volume and earnings, but on the long term to a decrease in operating cash flow. To measure abnormal cash flow from operations, the regression model by Roychowdhury (2006) is used. This model establishes the normal level of operating cash flow based on the sales level and change in sales level.

Below you can find the equation (2) to estimate abnormal cash flow from operations:

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \beta_1 \left(\frac{REV_{it}}{A_{it-1}}\right) + \beta_2 \left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \varepsilon_{it}$$

The definition of the variable for the equation (2) are shown below:

CFO_{it}	Net cash flow from operations for firm i in year t (Compustat: Net cash flow from operating activities "OANCF")
A_{it-1}	Total assets for firm i in year t-1 (Compustat: Lagged Assets - Total "AT")
REV_{it}	Revenue of firm i between year i (Compustat: Compustat: Sales year t "SALE")
ΔREV_{it}	Change in revenue of firm i between year i and t-1 (Compustat: Sales year t "SALE" – Sales year t-1 "SALE")
ε_{it}	Error term, proxy for level of abnormal cash flow from operations for firm i in in year t

The abnormal cash flow from operations is calculated by the difference between the actual cash flow from operations and the 'normal' cash flow from operations. To avoid heteroskedasticity, all variables are scaled by assets.

The second form of real activities earnings management is done through a decrease in discretionary expenses to improve earnings and current cash flow (Roychowdhury, 2006). Examples of discretionary accruals are: research and development (R&D) costs, advertising, and selling, general, and administrative expenses. This model establishes the normal level of discretionary expenses based on the lagged sales level.

Below you can find the equation (3) to estimate abnormal discretionary expenses:

$$\frac{DEXP_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \beta_1 \left(\frac{REV_{it-1}}{A_{it-1}}\right) + \varepsilon_{it}$$

The definition of the variable for the equation (3) are shown below:

$DEXP_{it}$	Discretionary expenses for firm i in year t (Compustat: Selling, general and administrative expense "XSGA" + Advertising expense "XAD" + Research and development expense "XRD")
A_{it-1}	Total assets for firm i in year t-1 (Compustat: Lagged Assets - Total "AT")
REV_{it-1}	Revenue of firm i between year t-1 (Compustat: Compustat: Sales year t "SALE")
ε_{it}	Error term, proxy for level of abnormal discretionary expenses from operations for firm i in in year t

Roychowdhury (2006) uses sales from the prior period (t-1) instead of the current period (t). This prevents the following problem: if companies manage sales upwards to rise reported earnings in any year, they may show unusually low residuals of discretionary costs in that year, even if they don't reduce discretionary spending. Therefore, discretionary costs spending is expressed as a function of lagging sales. The abnormal discretionary expenses are calculated by the difference between actual discretionary expenses and the normal discretionary expenses.

The last component of real activities earnings management is abnormal production costs (Roychowdhury, 2006). By increasing production in the short term, the cost price per unit becomes cheaper, since the fixed costs can be divided among a large number of units. This results in a lower cost of goods sold and improved earnings. However, this does worsen the operational cash flow, because the production costs are higher. First, the model establishes the normal level of production costs based on current and past sales, after which the abnormal production costs can be determined.

Below you can find the equation (4) to estimate abnormal production costs:

$$\frac{PCOST_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta_1\left(\frac{REV_{it}}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \beta_3\left(\frac{\Delta REV_{it-1}}{A_{it-1}}\right) + \varepsilon_{it}$$

The definition of the variable for the equation (4) are shown below:

$PCOST_{it}$	Production costs for firm i in year t (Compustat: Cost of goods sold "COGS" + Inventory – decrease (increase) "INVCH")
A_{it-1}	Total assets for firm i in year t-1 (Compustat: Lagged Assets - Total "AT")
REV_{it}	Revenue of firm i between year i (Compustat: Compustat: Sales year t "SALE")
ΔREV_{it}	Change in revenue of firm i between year t and t-1 (Compustat: Sales year t "SALE" – Sales year t-1 "SALE")
ΔREV_{it-}	Change in revenue of firm i between year t-1 and t-2 (Compustat: Sales year t-1 "SALE" – Sales year t-2 "SALE")
ε_{it}	Error term, proxy for level of abnormal production costs from operations for firm i in in year t

In the equation, production costs include cost of goods sold and change in inventory. To avoid heteroscedasticity, all variables are scaled by total assets. The abnormal production costs from operations are calculated by the difference between the normal production costs and the actual production costs.

For all equations, a cross sectional model is used in the calculations for each industry classified by its three-digit SIC code and each year.

4.4 Control variable

This research paper uses several control variables to control for potential endogeneity problems. Many different control variables are used in previous studies, but in order to get a regression that does not consist only of control variables, I decided to make a selection of the most used control variables in previous research.

Since the financial state of a company is of great importance to the degree of earnings management, five proxies are used to control for a firm's financial state and performance, namely leverage, ROA, loss last year, litigation and operating cash flow. Leverage is measured by total liabilities divided by total assets, ROA by earnings before extraordinary income divided

by average total assets, loss last year is a dummy variable that is equal to 1 if net income in the previous year is negative, otherwise 0. Litigation is a dummy variable for firms in a high-litigation industry and equals to 1 if SIC code is in the range of 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370, otherwise 0. Operating cash flow is measured by cash flow from operations divided by lagged total assets. According to the papers of DeAngelo et al. (1994), Roychowdhury (2006) and Francis and Wang (2008) companies with high leverage also often have high loan covenants, as these companies have more debt outstanding. To still comply with the loan covenants, a manager can influence accruals to still meet the debt covenants. To influence the financial performance of a company it is likely that managers will apply earnings management and therefore I expect that the control variables leverage, litigation and loss last year will have a positive effect and ROA and operational cash flow a negative.

The papers of Meek et al. (2007) and Adams and Ferreira (2009) argue that larger companies generally have fewer accruals due to a better governance structure and better monitoring by auditors and analysts. To control for this phenomenon, firm size is added. It is measured by the natural logarithm of total assets. As bigger firms are more likely to have fewer accruals, I expect that it will have a negative effect on earning management. Moreover, Meek et al. (2007) stated that firms that growth rapidly are more likely to commit earning management due to their less transparency. Therefore, is the market-to-book variable, measured by market value of equity divided by book value of equity. I expect that it will have a positive effect on earnings management. The last control variable is the Big 4 dummy variable. It will have the value of 1 if the company is audited by one of the Big 4 companies (Deloitte, EY, KPMG and PWC), otherwise 0. According Srinidhi et al. (2011), the companies audited by one of the Big 4 generally have a higher quality of earnings. This results in less earning management and therefore I expect a negative relationship between the dummy variable and earning management.

4.4 Regression model

To determine the effect of ethnic board diversity on earnings management, a regression model has set up. The following empirical model is used:

$$EM = \beta_0 + \beta_1 * DBOARD + \beta_2 * PDBOARD + \beta_3 * 2DBOARD + \beta_4 * 3DBOARD + \beta_5 * FSIZE + \beta_6 * LEVE + \beta_7 * ROA + \beta_8 * BIG4 + \beta_9 * LOSSD + \beta_{10} * LITID + \beta_{11} * MTB + \beta_{12} * OCF + \varepsilon_{it}$$

A summary of variables definitions can be seen in appendix table 2. The dependent variable earnings management (EM) is measured by four different proxies, namely accrual based earnings management (ACC) and three proxies for real activities earnings management, namely abnormal cash flow from operation (ACFO), abnormal discretionary expenses (ADCE) and abnormal production costs (APCO). ACC is the error term of the modified Jones model, which is the discretionary accruals of the total accruals. ACFO is the error term of the first equation of the real activities earnings management model. ADCE is the error term of the second equation of the real activities earnings management model and APCO is the error term of the third equation of the real activities earnings management model. The variables β_1 till β_4 are the independent variables. The represent if a board is ethnical diverse and the degree of the ethnical diversity of a board. According to the literature in chapter two, that suggest that ethnic diversity

decreases earnings management and that a more diverse board commits less in earnings management than a non diverse board, I expect that the variables β_1 till β_4 to be negative.

The variables β_5 till β_{12} are control variables to control for endogeneity. The control variables are chosen based on prior literature, which can be found in section 4.3.

5 Results

5.1 Descriptive statistics

Table 3 in the appendix shows the descriptive statistics of all variables used in the empirical models. The sample consists of 9,116 firm-year observations retrieved from 1,943 unique firms. For the dependent variable, earnings management, four different proxies are used, namely discretionary accruals, abnormal cash flow, abnormal production costs and abnormal discretionary expenses. Diverse board, percentage of diverse board, diverse board 2 and diverse board 3 are used to proxy for ethnic board diversity and are the independent variables.

The mean of the discretionary accruals (0.026), abnormal cash flow (-0.027), abnormal production costs (-0.041) and abnormal discretionary expenses (0.064) are all close to zero, which is in line with prior research. Indicating that there is no evidence of systematic earnings management in the estimation period. Moreover, the mean of diverse board is 63,4%, indicating that 63,4% of the sample has at least one ethnic diverse board member. Looking at diverse board 2, which indicate that there are at least two ethnic diverse board members, drops the percentage to 31,4% and for diverse board 3 drops it to 12,8%. The variable percentage of ethnic diverse board members indicates that 12,3% of all board members from the sample are non-Caucasian. Spencerstuart (2021) reported 21% of all S&P500 firm were from an ethnic minority in 2021. The difference can be explained by the longer time frame of the sample and the exclusion of companies. Furthermore, 91,8% of the sample is audited by a big four company (Deloitte, EY, KPMG or PWC). This was expected, as the sample consists out of U.S. listed firms and most of them have a big four auditor. The mean of the leverage is 26,2%, indicating that firms have a low debt compared to their equity and managers have less incentive to commit earnings management.

Table 4 reports the distribution of the firms over industry, based on SIC code. The largest part of the sample consists out of firms active in business equipment (1,903 firm-year obs.), manufacturing (1,549 firm-year obs.), other (1,469 firm-year obs.) and shops (1,302 firm-year obs.). There are no observations for finance and utilities, as these have been excluded from the sample due to the uniqueness of these sectors. The smallest sectors are consumer durables (169 firm-year obs.) and telecommunications (176 firm-year obs.). The distribution of companies in sectors is comparable with other studies.

Table 5 reports a Paerson correlation matrix with correlation coefficient from the dependent, independent and control variables. The coefficient of the matrix shows that there are non variables with a perfect correlation of 1 or -1 and thus no severe multicollinearity in the sample. There are some variables with a strong correlation, for example, abnormal production costs and abnormal discretionary expenses have a correlation coefficient of -0.854 ($p<0.05$), but this can be explained by the fact that the amount of sales plays a role in both models. The same applies to operating cash flow and abnormal cash flow from operations, which have a correlation coefficient of -0.862 ($p<0.05$).

Table 3: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
DACC	9,116	0.026	0.022	-0.001	0.009	0.020	0.040	0.073
ACFO	9,116	-0.027	0.066	-0.154	-0.070	-0.026	0.013	0.105
APCO	9,116	-0.041	0.165	-0.365	-0.146	-0.049	0.066	0.275
ADCE	9,116	0.064	0.173	-0.305	-0.042	0.095	0.189	0.341
DIVBOARD	9,116	0.634	0.482	0	0	1	1	1
PERCDIVBOARD	9,116	0.123	0.126	0.000	0.000	0.111	0.200	0.833
DIVBOARD2	9,116	0.314	0.464	0	0	0	1	1
DIVBOARD3	9,116	0.128	0.335	0	0	0	0	1
FSIZE	9,116	8.161	1.542	3.762	7.052	7.989	9.127	13.773
LEVE	9,116	0.262	0.174	0.000	0.130	0.259	0.374	0.872
ROA	9,116	0.056	0.060	-0.073	0.022	0.056	0.092	0.173
BIG4	9,116	0.918	0.275	0	1	1	1	1
LOSSD	9,116	0.142	0.349	0	0	0	0	1
LITID	9,116	0.264	0.441	0	0	0	1	1
MTB	9,116	3.951	3.361	0.925	1.739	2.792	4.683	14.388
OCF	9,116	0.114	0.063	0.009	0.069	0.106	0.152	0.248

Table 4: Industry distribution

	Industry	firm-year obs.	unique firms
1	Business Equipment	1,903	410
2	Chemicals	444	101
3	Consumer Durables	169	37
4	Consumer Nondurables	611	127
5	Energy	459	110
6	Finance	Dropped	Dropped
7	Health	1,034	246
8	Manufacturing	1,549	318
9	Other	1,469	293
10	Shops	1,302	253
11	Telecommunications	176	48
12	Utilities	Dropped	Dropped

Table 5: Paerson correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DACC	1.000															
ACFO	**-0.046**	1.000														
APCO	**-0.176**	**-0.537**	1.000													
ADCE	**0.220**	**0.218**	**-0.854**	1.000												
DIVBOARD	**-0.128**	**-0.036**	**0.040**	**-0.033**	1.000											
PERCDIVBOARD	**-0.096**	**-0.072**	**0.055**	**-0.064**	**0.739**	1.000										
DIVBOARD2	**-0.063**	**-0.038**	**0.022**	-0.025	**0.513**	**0.780**	1.000									
DIVBOARD3	**-0.031**	**-0.074**	**0.025**	0.012	**0.291**	**0.673**	**0.568**	1.000								
FSIZE	**-0.090**	**-0.088**	**-0.122**	**0.216**	**0.349**	**0.266**	**0.357**	**0.291**	1.000							
LEVE	**0.088**	**0.084**	**-0.142**	**0.187**	**0.119**	**0.066**	**0.122**	**0.076**	**0.323**	1.000						
ROA	**-0.201**	**-0.524**	**0.327**	**-0.056**	**0.055**	**0.056**	**0.045**	**0.060**	**0.066**	**-0.205**	1.000					
BIG4	**-0.022**	-0.002	**-0.049**	**0.061**	**0.134**	**0.067**	**0.100**	**0.063**	**0.299**	**0.140**	0.018	1.000				
LOSSD	**0.206**	**0.186**	**-0.068**	**-0.049**	**-0.042**	**-0.031**	**-0.027**	**-0.027**	**-0.099**	**0.084**	**-0.387**	**-0.048**	1.000			
LITID	**-0.040**	**-0.088**	**0.216**	**-0.300**	**0.046**	**0.095**	**0.046**	**0.042**	**-0.056**	**-0.080**	**0.049**	**-0.065**	**0.022**	1.000		
MTB	**-0.179**	**-0.358**	**0.340**	**-0.243**	**0.112**	**0.110**	**0.112**	**0.111**	**0.100**	**0.215**	**0.368**	**0.058**	**-0.101**	**0.099**	1.000	
OCF	**0.060**	**-0.862**	**0.450**	**-0.165**	0.020	**0.046**	0.014	**0.044**	-0.001	**-0.173**	**0.655**	0.005	**-0.248**	**0.144**	**0.403**	1.000

Bold is significant at 5% level ($p<0.05$). This table reports the results of Pearson correlation matrix, over a period of 13 years from 2007 to 2020. The sample includes 9,116 firm-year observations, represented by 1,943 unique firms.

5.2 Main results

Table 6 to 9 provide the regression results with the independent variables diverse board (DIVBOARD), percentage of diversity (PERCDIVBOARD), two or more ethnic diverse board members (DIVBOARD2) and three or more ethnic diverse board members (DIVBOARD3). All variables are winzorized to control for outliers and all regression models use industry and year fixed effects.

In table 6 is the first regression results presented, which is the regression with diverse board (DIVBOARD) as independent variable. This is a dummy variable, which takes the value of 1 if at least one board member is non-Caucasian. All four regression models capture 9,116 firm-year observations and have an adjusted R^2 of 36.1% , 82.6% , 36.1% and 31.5% for the models 1) DACC, 2) ACFO, 3) APCO and 4) ADCE, respectively. The empirical results of model 1) DACC shows a statistically negative coefficient of 0.002 and is statistically significant at a level of 5%, indicating that firms with at least one ethnic diverse board member decreases the level of discretionary accruals. When looking at the results of real activities earnings management models, different results can be observed. For example, model 2) ACFO shows a statistically positive coefficient of 0.002 at a level of 10% and model 4) ADCE shows a statistically negative coefficient of 0.023 at a level of 10%, however model 3) does not show a statistically significant result. There is no consistency in the results and thereby it is hard to make a clear statement.

The second regression results are presented in table 7, which is the regression with percentage diverse board (PERDIVBOARD) as independent variable. This is the percentage of non-Caucasian directors in the board of directors. All four regression models capture 9,116 firm-year observations and have an adjusted R^2 of 35.9% , 82.6% , 36.0% and 31.3% for the models 1) DACC, 2) ACFO, 3) APCO and 4) ADCE, respectively. The results of model 1) DACC shows a statistically negative coefficient of 0.004 at a significance level of 10%, explaining that firms with ethnic diversity tend not to manage earnings upward. Regarding real activities earnings management, I find constraining results. Only model 3) APCO has a positive significant coefficient of 0.005 at a significance level of 10%. Model 2) ACFO and 4) ADCE neither show significant results. These results do not provide evidence that there is a relationship between ethnic diverse boards and real activities earnings management.

For the second hypothesis, table 8 and 9 are used, based on the critical mass theory that a firm need at least three ethnic diverse board members in order to break the communication issues. Table 8 presents the regression results with the independent variable a dummy variable, which takes the value of 1 if at least two or more board members are non-Caucasian (DIVBOARD2). All four regression models capture 9,116 firm-year observations and have an adjusted R^2 of 36.0% , 82.6% , 36.1% and 31.5% for the models 1) DACC, 2) ACFO, 3) APCO and 4) ADCE, respectively. In table 9, the independent variable is a dummy variable, which takes the value of 1 if at least three or more board members are non-Caucasian (DIVBOARD3). All four regression models capture 9,116 firm-year observations and have an adjusted R^2 of 36.0% , 82.6% , 36.1% and 31.5% for the models 1) DACC, 2) ACFO, 3) APCO and 4) ADCE, respectively. For model 1) DACC, table 8 shows a statistic significant positive coefficient of 0.001 at a 5% level and table 9 does not show a statistic significant coefficient. For model 2) ACFO, table There is no evidence that three or more ethnic diverse board members

Concluding, diversity matters for the degree of accrual earnings management. Meanwhile, I do not find significant evidence that diversity influence real activities earnings management. In addition, there is no evidence that supports the critical mass theory.

Table 6: Regression Result: Ethnic diverse board on earnings management

	1) DACC	2) ACFO	3) APCO	4) ADCE
(Intercept)	**0.018*****(0.000)	**0.085*****(0.000)	0.023 (0.117)	**-0.145*****(0.000)
DIVBOARD	**-0.002****(0.039)	**0.002***(0.054)	0.016 (0.193)	**-0.023***(0.087)
SIZE	**-0.002***** (0.000)	**-0.003*****(0.000)	**-0.012*****(0.000)	**0.018*****(0.000)
LEVE	**0.013***** (0.000)	**-0.023*****(0.000)	**-0.046*****(0.000)	**0.166*****(0.000)
ROA	**-0.086***** (0.000)	**0.034*****(0.000)	**0.089*****(0.010)	**0.400*****(0.000)
BIG4	0.001 (0.124)	**0.006*****(0.000)	-0.008 (0.156)	**-0.010*** (0.092)
LOSSD	**0.008***** (0.000)	-0.001 (0.558)	**0.023*****(0.000)	**-0.029*****(0.000)
LITID	**0.006***** (0.000)	-0.001 (0.120)	**0.024*****(0.000)	**-0.057*****(0.000)
MTB	**-0.001***** (0.000)	**0.000*****(0.000)	**0.009*****(0.000)	**-0.013*****(0.000)
OCF	**0.115***** (0.000)	**-0.944*****(0.000)	**0.870*****(0.000)	**-0.270*****(0.000)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
R^2	36,3%	82.7%	36.3%	31.7%
Adj. R^2	36.1%	82.6%	36.1%	31.5%
Num. obs.	9,116	9,116	9,116	9,116

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

This table reports the results of ordinary least square regressions, over a period of 13 years from 2007 to 2020. The sample includes 9,116 firm-year observations, represented by 1,943 unique firms. DIVBOARD is a dummy variable that equals 1 if at least one board member is from an ethnic minority

Table 7: Regression results of percentage ethnic board diversity on earnings management

	1) DACC	2) ACFO	3) APCO	4) ADCE
(Intercept)	**0.019*****(0.000)	**0.085***** (0.000)	0.020 (0.173)	**-0.142***** (0.000)
PERCDIVBOARD	**-0.004*** (0.092)	0.001 (0.566)	**0.005*** (0.091)	-0.062 (0.114)
SIZE	**-0.002***** (0.000)	**-0.003***** (0.000)	**-0.010***** (0.000)	**0.017***** (0.000)
LEVE	**0.013***** (0.000)	**-0.023***** (0.000)	**-0.045***** (0.000)	**0.165***** (0.000)
ROA	**-0.086***** (0.000)	**0.034***** (0.000)	**0.089***** (0.010)	**0.399***** (0.000)
BIG4	0.001 (0.176)	**0.006***** (0.000)	-0.006 (0.231)	**-0.011**** (0.050)
LOSSD	**0.008***** (0.000)	-0.001 (0.556)	**0.023***** (0.000)	**-0.029***** (0.000)
LITID	**0.006***** (0.000)	-0.001 (0.132)	**0.024***** (0.000)	**-0.057***** (0.000)
MTB	**-0.001***** (0.000)	**0.000***** (0.000)	**0.009***** (0.000)	**-0.013***** (0.000)
OCF	**0.115***** (0.000)	**-0.944***** (0.000)	**0.870***** (0.000)	**-0.268***** (0.000)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
R^2	36.1%	82.6%	36.2%	31.6%
Adj. R^2	35.9%	82.6%	36.0%	31.3%
Num. obs.	9,116	9,116	9,116	9,116

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.
This table reports the results of ordinary least square regressions, over a period of 13 years from 2007 to 2020. The sample includes 9,116 firm-year observations, represented by 1,943 unique firms.

Table 8: Regression results of two or more ethnic diverse board members on earnings management

	1) DACC	2) ACFO	3) APCO	4) ADCE
(Intercept)	**0.019***** (0.000)	**0.085***** (0.000)	**0.027*** (0.077)	**-0.153***** (0.000)
DIVBOARD2	**0.001**** (0.049)	0.001 (0.350)	**0.013**** (0.020)	**-0.024***** (0.048)
SIZE	**-0.002***** (0.000)	**-0.003***** (0.000)	**-0.011***** (0.000)	**0.018***** (0.000)
LEVE	**0.013***** (0.000)	**-0.023***** (0.000)	**-0.045***** (0.000)	**0.165***** (0.000)
ROA	**-0.086***** (0.000)	**0.034***** (0.000)	**0.089***** (0.010)	**0.400***** (0.000)
BIG4	0.001 (0.103)	**0.006***** (0.000)	-0.006 (0.225)	**-0.011*** (0.052)
LOSSD	**0.008***** (0.000)	-0.001 (0.550)	**0.023***** (0.000)	**-0.029***** (0.000)
LITID	**0.006***** (0.000)	-0.001 (0.129)	**0.024***** (0.000)	**-0.056***** (0.000)
MTB	**-0.001***** (0.000)	**0.000***** (0.000)	**0.009***** (0.000)	**-0.013***** (0.000)
OCF	**0.115***** (0.000)	**-0.944***** (0.000)	**0.871***** (0.000)	**-0.272***** (0.000)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
R^2	36.2%	82.6%	36.3%	31.7%
Adj. R^2	36.0%	82.6%	36.1%	31.5%
Num. obs.	9,116	9,116	9,116	9,116

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

This table reports the results of ordinary least square regressions, over a period of 13 years from 2007 to 2020. The sample includes 9,116 firm-year observations, represented by 1,943 unique firms. DIVBOARD2 is a dummy variable that equals 1 if at least two board members are from an ethnic minority

Table 9: Regression results of three or more ethnic diverse boardmembers on earnings management

	1) DACC	2) ACFO	3) APCO	4) ADCE
(Intercept)	**0.020*****(0.000)	**0.084***** (0.000)	0.020 (0.183)	**-0.143***** (0.000)
DIVBOARD3	**0.003****(0.020)	-0.001 (0.234)	0.002 (0.630)	**-0.010**** (0.042)
SIZE	**-0.002***** (0.000)	**-0.003***** (0.000)	**-0.010***** (0.000)	**0.016***** (0.000)
LEVE	**0.014***** (0.000)	**-0.023***** (0.000)	**-0.046***** (0.000)	**0.166***** (0.000)
ROA	**-0.086***** (0.000)	**0.034***** (0.000)	**0.087**** (0.011)	**0.402***** (0.000)
BIG4	0.001 (0.103)	**0.006***** (0.000)	-0.006 (0.235)	**-0.012**** (0.045)
LOSSD	**0.008***** (0.000)	-0.001 (0.556)	**0.023***** (0.000)	**-0.029***** (0.000)
LITID	**0.008***** (0.000)	-0.001 (0.156)	**0.025***** (0.000)	**-0.058***** (0.000)
MTB	**-0.001***** (0.000)	**0.000***** (0.000)	**0.009***** (0.000)	**-0.013***** (0.000)
OCF	**0.115***** (0.000)	**-0.944***** (0.000)	**0.870***** (0.000)	**-0.270***** (0.000)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
R^2	36.3%	82.6%	36.2%	31.4%
Adj. R^2	36.1%	82.6%	36.0%	31.2%
Num. obs.	9,116	9,116	9,116	9,116

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

This table reports the results of ordinary least square regressions, over a period of 13 years from 2007 to 2020. The sample includes 9,116 firm-year observations, represented by 1,943 unique firms. DIVBOARD3 is a dummy variable that equals 1 if at least three board members are from an ethnic minority

6 Conclusion

This study examined the relation between ethnic board diversity and earnings management. Therefore, the following research question has set-up: "What is the effect of board diversity on earnings management?" To measure earnings management, four different models are used, namely modified Jones model, abnormal cash flow from operations, abnormal discretionary expenses and abnormal production costs. For ethnic board diversity, four different proxies are used.

In order to test relation between ethnic diversity in the board of directors and earnings management, I performed a quantitative archival study. The sample used consists of U.S. listed firms in the period 2007-2020. Two hypotheses were formulated on the basis of a literature review. I expected a negative relation between an ethnic diverse board and earnings management. Moreover, I expected that the critical mass theory by Kramer and Konrad (2008), that you need at least three or more diverse board members to perceive influence, keeps stands.

My findings provide evidence that ethnically diverse boards contributes to reducing accrual based earnings management and demonstrates the benefits of team heterogeneity on boards. However, I did not find evidence that there is a relationship between ethnic diverse boards and real activities earnings management. Moreover, the results did not support the critical mass theory by Kramer and Konrad (2008), so it is unclear what a optimum amount is to maintain the effectiveness of ethnic board diversity.

This study contributes to existence literature as it is one of the first studies that investigate the effect of ethnic board diversity on earnings management for S&P listed firms. As where previous research focused on the effect of gender and ethnicity diversity, I only focused on the effect of ethnicity on earnings management. As the results show a positive relation between ethnic board diversity and earnings quality, my results are relevant for regulators i.e. S&P Global Inc., institutional investors and public investors as it can help determine the quality of earnings. In addition, it brings potentially input for new regulations for the corporate governance code stated by S&P Global Inc.

Despite all effort to avoid limitations, has this research limitations. The first limitations is that there is might be an endogeneity problem. Despite all control variables used in this thesis, there might be other factors that influence earnings management. This is because it is very difficult to determine how ethnicity affects earnings management. In an ideal situation, all circumstances are the same, except for the difference in ethnicity in the board of directors. The second limitation is the limitation in data. If the ethnicity of board members is not known or board members are not willing to share the information, the observation is removed from the data set and therefore excluded. This resulted in fewer observations. The last limitation is time interval. Due to a lack of data, I was forced to use an interval of 2007-2020. It could be interesting to investigate the effect before and after the introduction of SOX.

For further research, I suggest looking at multiple facets of diversity. A diverse board of directors is more than just ethnicity. There are all kinds of other facets that can contribute to diversity in the board of directors and thus contribute to the financial reporting quality. For example, the environment in which you grew up or the education followed can contribute to diversity. Moreover, according to the study by Adams & Ferreira (2009) shows that female board members are better able to monitor earnings management as more board meetings are

attended. For future research I recommend setting up a control variable for attendance. The final suggestion for future research is to look at other continents or countries. This study uses only U.S. listed firms and can therefore be difficult to generalize to the rest of the world.

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Appendix

Summary of variable definition

Variables (variable name)	*Description*
Dependent variable Earnings management	
Discretionary accruals (DACC)	Discretionary accruals, accruals that are not driven by an economic activity, but driven by managerial behaviour, measured by the error term of the modified Jones model (equation 1)
Abnormal cash flow from operations (ACFO)	Abnormal cash flow from operations, represents real activity manipulation by the management measured by the error term of the real activities earnings management model (equation 2)
Abnormal discretionary expenses (ADCE)	Abnormal discretionary expenses, represents real activity manipulation by the management measured by the error term of the real activities earnings management model (equation 3)
Abnormal production costs (APCO)	Abnormal production costs, represents real activity manipulation by the management measured by the error term of the real activities earnings management model (equation 4)
Independent variable ethnic board diversity	
Diverse board (DIVBOARD)	Dummy variable, takes a value of 1 if at least one director in the board is non-Caucasian, otherwise zero
Percentage diverse board (PERCDIVBOARD)	Percentage of non-Caucasian directors in the board
Two or more board members diverse (DIVBOARD2)	Dummy variable, takes a value 1 if at least two directors in the board are non-Caucasian, otherwise 0
Three or more board members diverse (DIVBOARD3)	Dummy variable, takes a value 1 if at least three directors in the board are non-Caucasian, otherwise 0
Control variables	
Firm size (FSIZE)	Firm size, measured by log of total assets (Compustat: log of "AT")
Leverage (LEVE)	Leverage of a firm, measured by total liabilities divided by total assets (Compustat: ("DLTT"+"DLC") / "AT")
Return on assets (ROA)	Return on assets, measured by net income divided by total assets (Compustat: "IB" / "AT")
Auditor of big four (BIG4)	Dummy variable, takes a value of 1 if the auditor is one of the big 4 auditor firms (Deloitte, EY, KPMG or PWC), otherwise 0
Loss last year (LOSSD)	Dummy variable, takes a value of 1 if the company reported in the previous year a loss (Compustat: Lagged "NI"), otherwise 0
Litigation (LITID)	Dummy variable, takes a value of 1 if the firm is active in a high-litigation industry (SIC codes: 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370), otherwise 0
Market-to-book (MTB)	Market-to-book ratio, measured by market value divided by book value of equity (Compustat: ("PRCC_F" * "CSHO") / "CEQ")
Operating cash flow (OCF)	Operating cash flow ratio, measured by operating cash flow divided by lagged total assets (Compustat: ("OANCF" – "XIDOC") / lagged "AT")