



# MASTER THESIS

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## Board Diversity on Corporate Earnings Management

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### ABSTRACT

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This thesis examines the effect of board diversity (gender and ethnic) on corporate earnings management by using five different proxies of earnings management. While prior researchers only examined the presence of diversity in the board. By using the tercile split method, I construct *Diversity Index* to develop *High Diversity Index* and *Low Diversity Index*. This research finds that firm with high diverse directors do not necessarily imply as better monitor, thus improve financial reporting quality. Instead, firm with low diverse board tend to have better financial reporting quality through conservative accounting policy. Furthermore, this research also shows an evident that high diverse boards tend to substitute accruals based earnings management and real action earnings management during certain circumstances. While it is not really clear on what is the critical mass of diverse director, but it is evident that too much diversity in the board do not necessarily lead into better management decisions and better financial reporting quality. This research contribute to public policy maker as a light reminder in gender based quota regulations.

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## 1. Introduction

Board diversity has become a conflicting debate in recent decades. Eversince the largest accounting scandals and financial crisis at the beginning of 2000, namely Enron, Worldcom, and 2008 financial crisis. Questions on the importance of diversity have been raised on whether things would have been different if female directors run the firm?

Despite the conflicting arguments between researchers on the effect of female directors. Regulators and the corporate world seem to see the benefits of board diversity where regulations have been imposed regarding gender quota. First, in 2003, Norway imposed gender quota regulation, requiring publicly listed companies to have at least 40% female directors on the board. Following Norway, Spain and the French also imposed the same regulation in 2007 and 2010, respectively. Not to mention, recently, the Netherlands just imposed a regulation on board gender diversity (Reuters, 2019).

What about ethnic diversity? While most existing literatures and regulation focused on female directorships, they tend to overlook ethnic diversity. For instance, Goldman Sachs CEO, David Solomon recently announce that the bank will no longer take any firm public unless the firm has at least one “diverse” board with a specific focus on women. The statement gains a lot of applaud for the substantial efforts made by the firm, on the other hand, the firm also gain some criticism and question from the media. Janice Gassam, a senior contributor from Forbes, criticize that the firm needs to focus on ethnic diversity and not to overlook this issue (Gassam, 2020). Another evidence, Institutional Shareholder Service (ISS) also shown that non-Caucasian directors are only 10% out of the total directors in the publicly listed firms in the U.S.

The research regarding board diversity on corporate earnings management is interesting as two possible outcomes could arise. First, having a board that compromises different gender and ethnic can increase the diversity of the directors with greater knowledge, perspectives, and characteristics which help to improve monitoring and the quality of board decisions (Carter et al., 2003; Hillman et al., 2007; Adams and Ferreira, 2009). On the contrary, there is questions raised on the effect of one diverse director? Is it enough to make a change? having one diverse director on the board might make the individual to be like a “diversity hire” and have negative or little effect on the firm. Therefore, this research will examine the effect of board diversity on earnings management in order to answer the following research question:

*“What is the effect of board diversity on financial reporting quality?”*

In attempts to answer the research question, I will use two proxy of diversity; gender diversity and ethnic diversity. First, I will follow a similar criterion developed by most of the prior researchers. Additionally, to examine the effect of high and low diverse board, I will combine Hafsi and Turgut (2012) and Erkens et al. (2018) methods to construct low diversity index and high diversity index. For the dependent variable, I will examine the quality of financial reporting through the engagement in accruals based earnings management, real action earnings management, and the probability of restatement. First is the accruals based earnings management, I will use the performance-matched Jones model by Kothari et al. (2005) to control for performance. Second, I will follow Roychowdhury (2006) and use the abnormal cash flows from operations, abnormal production costs, and abnormal discretionary expenses to examine real action earnings management. Lastly, I will use restatement, a dummy variable of 1 if the firm financial statement is restated, 0 otherwise.

There are numerous researchers that examine the effect of board diversity on financial reporting quality or firm performance, (1) suggesting that female directorships are associated with better monitoring, thus better financial reporting quality. (Krishna and Parsons, 2007; Barua et al., 2010; Peni and Vähämaa, 2010; Srinidhi et al., 2011; Thiruvadi and Huang 2011; Wahid 2019), (2) suggesting that diverse board (gender and ethnic) bring positive effect to firm performance (Carter et al., 2003; Erhardt et al., 2003), (3) suggesting that cultural values (individualism) are positively associated with earnings management (Han et al., 2010).

In this research paper, I will investigate the effect of board diversity on financial reporting quality by looking at two different proxy of diversity (gender and ethnic), and five different proxy of financial reporting quality (accruals based earnings management, real action earnings management and the probability of restatements). Zang (2012) and Qi et al. (2018) argue that firm might substitute accruals based earnings management with real action earnings management. Therefore, it is important to investigate both methods to see whether diverse board improve financial reporting quality or not. Second, most researchers only look at the presence of diverse board (gender and ethnic) and did not take into consideration the effect of low and high diverse board. Therefore, it is interesting to see whether low and high diverse board behave differently or not. Lastly, I will answer the avenues for future research that are suggested by Wahid (2019) and examine the effect of diversity in the audit committee. This is important since the outcomes of financial reporting are a combination of management and audit committees, not solely the management.

## **2. Literature Review**

This chapter will discuss about the most relevant concepts, theories, and related literature to the topic. This chapter consists of four parts. The first part will give an overview of earnings management. For the second part will discuss about board diversity, where I will explain how board diversity can become a benefit to a firm, specifically on the financial reporting quality. Third, I will explain the importance of the audit committee on financial reporting quality. Lastly, I will draw a conclusion based on the theories and previous evidence.

### **2.1. Earnings Management**

One of the arguments that accounting earnings are useful because accounting earnings contain certain information that is useful in determining firm performance (Ball and Brown, 1968). Therefore, it is not surprising that many academic research use accounting earnings as a measurement of firm performance, namely Carter et al. (2003), Erhardt et al. (2003), Adams and Ferreira (2009), Carter et al. (2010), Ahern and Dittmar (2012), Nielson and Nielson (2013), and Liu et al. (2014). However, on the contrary, accounting earnings also has a potential side effect where managers can manipulate earnings through some discretion to meet specific targets, which later known as earnings management.

Healy and Wahlen (1999, p.368) define earnings management as managers judgmental decision in financial reporting, and in structuring their firm's transactions, in such a way to mislead the underlying economic performance of the firm or to influence contractual outcomes that depend on reported accounting numbers. While it is difficult to determine precisely to what extend earnings management can mislead shareholders. Most people refer earnings management as fraud or illegal action. However, good earnings management also exists (Healy and Wahlen, 1999). Good earnings management can provide a piece of credible information regarding firm performance to the shareholders. For instance, when the internal audit committee performs their duty well, managers' forecasts or estimates of net receivables can be seen as a piece of credible information for shareholders (Healy and Wahlen, 1999). This view is also supported by Tucker and Zarowin (2006), where they showed that income smoothing could improve the informativeness of the stock price.

Earnings management has been used for a variety of reasons. However, Healy and Wahlen (1999) has concluded three of the most widely investigated cases or incentives for earnings management, namely the capital market motivation, contracting motivation, and regulatory motivation. First, the capital market motivation explains that firm will engage in earnings

management in the periods of capital market transactions or to fulfill the expectations of financial analysts or management. Cohen and Zarowin (2010) support this evidence by examining the engagement of accruals and real earnings management during SEOs, they find that earnings are managed upward during the SEOs period and being reversed after the SEOs period end. Second, the contracting motivation explains that firm will engage in earnings management to increase stock-based compensation and to avoid debt covenant violation. Bergstresser and Philippon (2006) support the stock-based compensation view, explaining that CEOs that are more tied to stock-based compensation will have more incentive to manipulate earnings. Another evidence for the debt covenant violation avoidance is by DeFond and Jimbalvo (1994), where firm will engage in earnings management when it is close to debt covenant violation. Third, the regulatory motivation explains that firm will engage in earnings management to avoid regulation. Jones (1991) supports this evidence, showing that firm will manage earnings downwards to gain import relief.

While earnings management is being used for several reasons, as mentioned above. In many cases, earnings management may reduce the quality of financial reporting if being used excessively (Beneish, 2001). The excessive use of earnings management reduces financial reporting quality through the reliability of the number that is presented, which does not represent the true condition of the firm performance (Healy and Wahlen, 1999; Dechow et al., 2010). In this thesis, I will use earnings management as a proxy for financial reporting quality and examine the effect of board diversity in mitigating the excessive use of earnings management.

### **2.1.1. Earnings Management Method**

Earnings management can occur in two different ways; Accruals-based earnings management and real action earnings management. While accruals-based earnings management refers to the manipulation of discretionary accruals through the choice of accounting policies by the manager and has a non-direct effect on cash flows. On the contrary, real action earnings management refers to the manipulation of firm business operations and has a direct effect on the cash flows. In this section, I will explain both methods.

#### **Accruals Based Earnings Management**

Accruals based earnings management refers to a manager's choice of accounting policies or estimates to influence reported earnings (Dechow et al., 1995; Healy and Wahlen, 1999; Zang,

2012). For instance, the manager's choices of depreciation method and provision estimates for doubtful accounts can influence reported earnings without any direct effect on the cash flows.

Accruals are the adjustment to revenues and expenses, or it can also refer as the difference between earnings and cash flows (Rider & Moore, 2006). Accruals consist of non-discretionary accruals and discretionary accruals. The non-discretionary accruals are the accruals that are driven by economic factors, and managers could not control them. On the other side, the discretionary accruals are the managed part of accruals that can be controlled through manager decisions of accounting policies. The discretionary accruals are the accruals that will be used to determine financial reporting quality (Dechow et al., 1995).

Jones (1991) introduces the Jones model to capture discretionary accruals. She defines accruals-based earnings management through sales growth (to capture the changes in working capital) and properties, plant, and equipment (PPE) (to capture the long-term accruals), which later improved by Dechow et al. (1995) and became the modified Jones model. The modified Jones model introduces an adjustment of changes in credit sales in sales growth. This adjustment increases the explanatory power of Jones (1991) that suffers from type II errors. However, despite the improvement, the modified Jones model still suffers from type I errors, or even more than Jones (1991) model. Where later, Kothari et al. (2005) introduce the performance-matched Jones model by taking into account return on assets (ROA), to control for performance and mitigates type I errors.

Despite all of the efforts that have been made to increase the explanatory power of the Jones model, Jackson (2018) examine that accruals based earnings management still perform poorly and suffers from several weaknesses, namely (1) Cross-sectional estimates are affected by industry peers, (2) Implausible amount of discretionary accruals to the return on assets (ROA), (3) The number of firms that are revealed to engage in earnings management are not correlated with discretionary accruals. Therefore, due to these weaknesses, in this thesis, I will take these weaknesses into account and provide another proxy of earnings management.

### **Real Action Earnings Management**

According to Zang (2012), real action earnings management is a deliberate action that influences reported earnings, which is accomplished through the timing or structuring of operation, investment, or financing transaction. These sets of actions are problematic to business operations. In a survey that is conducted by Graham et al. (2005), most CFOs will

engage in real action earnings management through decreasing research and development (R&D), advertising, and maintenance expenses, otherwise they will postpone new projects.

Roychowdhury (2006) introduce three methods to detect real action earnings management: (1) Abnormal levels of cash flow from operations (CFO), (2) Abnormal levels of production costs, and (3) abnormal discretionary expenses. The abnormal level of cash flows from operations (CFO) examine how firm manipulate sales through accelerating sales timing, relaxation credit terms, and unsustainable sales through excessive discounts. The abnormal levels of production costs will look at the manipulation of lowering the cost of goods sold (COGS) through overproduction to improve gross margin. Third, the discretionary expenses will look at the manipulation of discretionary expenses through the reduction of discretionary expenditures to improve reported margins. All of these methods manipulate earnings of this period with the expense of future periods cash flows. For instance, the abnormal cash flow from operation explain that sales manipulation through excessive discounts increases the cash inflow of sales as a result of the excessive discount. While for the abnormal production costs, aggressive overproduction to decrease the cost of goods sold may only last for this current period and did not last for the future period, which causes instability in the gross margin and hurts earnings in the future. This real action earnings management model has been used by researchers widely, namely Cohen et al. (2008), Cohen and Zarowin (2010), Zang (2012), and Qi et al. (2018).

Zang (2012) argues that accruals-based earnings management, and real action earnings management can substitute each other depending on the firm's competitive status, financial condition, monitoring from investors/analysts, and tax expenses. Therefore, examining the real action earnings management are useful. It might be possible that firm do not engage in accruals based earnings management but engage in real action earnings management.

## **2.2. Board Diversity**

Board diversity is defined as the variation of each individual among the firm, such as knowledge, education, personalities, and values (Coffey and Wang, 1998). While the definition is mostly non-observable. The observable differences such as gender, ethnicity, age, and nationality are also considered as diversity, according to the Equal Employment Opportunity Commission (EEOC). With the role of directors which are monitoring and advising (Fama and Jensen, 1983). Board diversity has become one of the most important parts of corporate governance. For instance, a director who has expertise in finance, law, psychology can bring value to the firm through their diverse expertise. While the board that comes from different



ethnicity can bring value through their diverse cultural experiences (Coffey and Wang, 1998). Similarly, this also applies to gender diversity, where different characteristics of males and females can bring different perspectives to the firm (Croson and Gneezy, 2009).

Fields et al. (2003) argue that board composition can influence the final decision making due to the heterogeneity of knowledge, experiences, and innovations that diverse individuals bring to the firm. Based on this argument and prior research, it provides the possibility that gender and ethnic diversity play an important role on the board composition and linked to financial reporting quality through the different perspectives of thinking, which later translated into different decision making that enhances better governance (Erhardt et al., 2003; Gul et al., 2011).

In the next section, I will explain the theory of two types of diversity (gender diversity and ethnic diversity), which will be used as the proxy for board diversity. The idea is to explain the underlying theories of each diversity proxy and how it can affect director's decision making, thus improving financial reporting quality. However, it is important to note that there is no single theory can predict the relationship of board diversity on financial reporting quality. But, those theories can provide an understanding and insight into the issue. Therefore, in order to construct the hypothesis, I will draw a conclusion based on those theories.

### **2.1.2. Gender Diversity**

As female directors become more popular in recent decades, new policies and extensive research on gender diversity have become more important than ever. In the last decade, the number of female directors has increased significantly, where the percentage of female directors in the S&P500 increased to 26% in 2019, an up of 10% from 2009 (Spencerstuart, 2019). Whilst, in Europe, many countries such as Norway, Spain, French, and the Netherlands have imposed gender quota, acknowledging the importance of female directors on the board (Reuters, 2019).

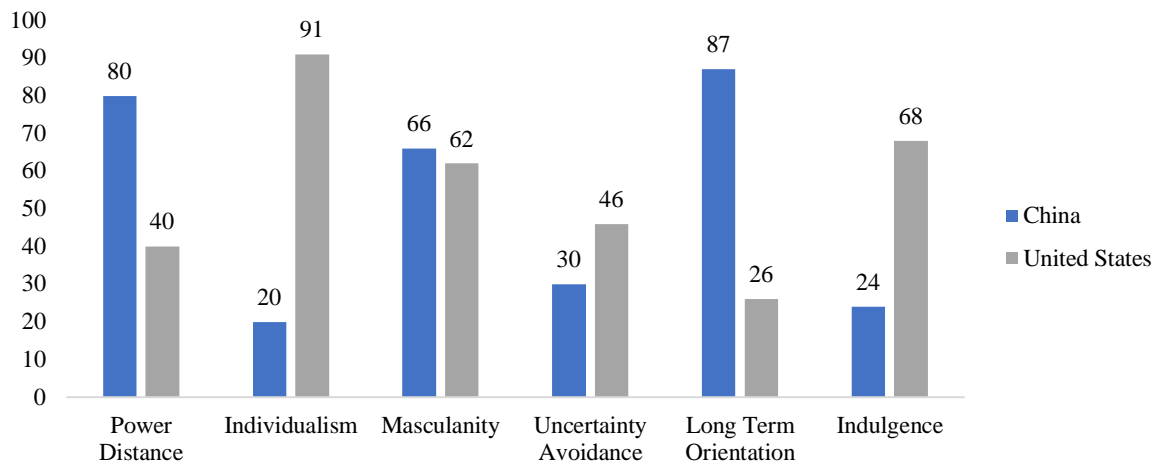
Prior literatures have used a lot of different theories in explaining how male and female directors can be different, thus affecting board decision making (See Appendix Table 1). Based on the literature review of gender diversity, researchers explain that the social role theory (nature of characteristics) accounts for the differences between male and female in their thinking, feeling, and action, where later it will determine their leadership styles in the future. The social role explains that female are thought to be friendly, nurturing, passive, and emotional, while male, on the other side, are thought as strong, independent, competent,

assertive, and aggressive (Eagly, 1987). These stereotypes or portrayals lead researchers to investigate the effect of social role theory on the type of leadership. The results of the leadership theory explain that male directors are concluded to be more autocratic, assertive, competitive, and into transactional leadership, where they focused on rewards-based compensation or performance-based. On the contrary, female directors are more democratic, cooperative, collaborative and into transformational leadership, which focused on nurturing and building relationships towards their employee (Eagly, 1987; Eagly, 1990; Eagly et al., 1995; Carless, 1998; Rosenthal, 2000; Pounder and Coleman, 2002). While both theories explain the differences between male and female and concluded on which type of leadership they are, none of the theories explicitly suggest which one is better towards the other.

These characteristics differences and leadership styles are being used by the researcher in explaining how female directors behave differently in the corporate world. The studies by Powell and Asnic (1997), Rose (2007), Eckel and Grossman (2008), and Gold et al. (2009) explain that female director are more risk-averse than male director through their financial decision making, more transparent, thus reducing information asymmetry and better-informed shareholder. Furthermore, Ford and Richardson (2013) make an empirical overview and suggest that female director are more ethical than male director, this empirical overview are supported through extensive literature on the effect of gender diversity on earnings management. Prior literatures suggest that female director engage in less earnings management and improve financial reporting quality (Krishna and Parsons, 2007; Peni and Vähämaa, 2010; Srinidhi et al., 2011, Thiruvadi and Huang, 2011, Wahid, 2019, etc). Through all of this study, it can be concluded that gender diversity brings different values of knowledge, traits, and decision making.

### **2.1.3. Ethnic Diversity**

While the research on gender diversity is relatively extensive and has been done by many researchers. On the contrary, the research on ethnic diversity is not as extensive as gender diversity. One of the ways to explain ethnicity is through national culture, which explains individual behavior and differences between countries (Han et al., 2010). Hofstede (1980) and Hofstede and Hofstede (2010) explain that culture is a beliefs and values from their parents and society, which individual acquired during their early childhood and hard to change. Therefore, it explains that different nationalities or ethnicity are unique towards each other in terms of their characteristics, beliefs, and values.



*Source: Hofstede Insights*

Hofstede and Hofstede (2010) explains these cultural differences through the six dimensions: (1) Power distance, (2) Individualism, (3) Masculinity, (4) Uncertainty avoidance, (5) Long term orientation, and (6) Indulgence. Above I provide an example by comparing the characteristics of Western (U.S) and Asian (China) using Hofstede 6 cultural dimension in order to give a brief understanding of the theory. The power distance explains about the hierarchical distance between the society, where China score 80, explaining the level of inequality between manager and employee are high. While the U.S score 40, showing that the level of equality between manager and employee is almost the same, meaning that manager and employee have equal voice towards each other, unlike China where equal opportunity between manager and employees are low. Individualism explains whether the people in the society are more group-oriented or individualist. China scores 20, showing that people in China are more towards collectivism, cultures where being in a group and helping each other are very much appreciated. On the other side, U.S score 91, explaining that being integrated into a group is not as important as in China. For masculinity, it explains how people in society show their feelings, whether they are very open or not. In this case, China and the U.S do not differ that much, explaining that people in both countries tend to be calmer and kept their feeling for themselves. Uncertainty avoidance explains how people react to uncertain situations, for China, they score 30 compare to U.S score 46, explaining that China is more tolerant of different kinds of opinions and open to new situations. While in terms of long term orientation, China is more committed to long-term orientation and appreciates their family business tradition to preserve in the long run, while the U.S sees it differently. Indulgence is to what extent people are being controlled or restrained. The higher means that people are not being controlled by the norm or culture that much. For China, the country scores relatively low, meaning that their society is

being controlled by the norms and cultural values, restraining their ability to spend time with family and being control by the norms to work harder around their society. While, on the other hand, the U.S is more indulgence and free in this case and appreciate time with family more than in the workplace. Based on this example alone, we can see that each nationality or ethnicity can have different cultures and characteristics, which later affected how people can make the decision making.

Through the above explanation, many researchers have tried to examine the benefits of diverse board to the corporation. For instance, Robinson and Dechant (1997), Hambrick et al. (1998) and Page (2008) examine that gender and ethnic diverse team might improve decision making as it gives the team a broader knowledge and fruitful discussions, which later improve decision making. Cox and Blake (1991) also explain six benefits of having diverse ethnicity. First, diversity can bring assets and cost advantages through individual rich experience and different knowledge. Second, firms that promote diversity can improve their reputation in the job market and attract the best talent in the job market. Third, diversity can improve firm marketing strategy in the local markets, thus attracting local consumers. Fourth, unique individual characteristic provides different perspectives to the firm and enhance creativity. Fifth, different experiences provide a different approach to solve problems and improve decision making. Six, different ethnicity can complement each other weaknesses.

Corporations seem to see these benefits of the diverse board through their action in creating a team with diverse thinkers for solving issues and challenging problems due to their critical discussions towards one another, which improves the quality of their decision making (Hunt et al., 2015). This view are supported by Carter et al. (2003) and Erhardt et al. (2003) and Nielson and Nielson (2013), they examine the effect of board diversity (gender and ethnic) on firm performance, measured by Tobins-Q, ROI, and ROA. They conclude that diverse board brings extensive knowledge to the firm and shape a strategic mindset and provide a more robust decision making, thus improving firm performance. Another evidence on ethnicity are the study by Doupnik (2008), Han et al. (2010), and Gray et al. (2015) where they examine the effect of cultural differences on financial reporting quality, suggesting that individualism countries tend to be more aggressive and manage earnings upwards due to their optimistic behavior.

#### **2.1.4. Double Edged Nature of Diversity**

Although many prior literatures have addressed the benefits of having a diverse board. It is also important to acknowledge that diversity might bring a negative effect on firm financial performance and reporting quality. Ferreira (2010) in his book address three potential costs of having diverse board. First is the lack of communication and conflict between each member of the board. Chatman and Flynn (2001) and Amason (1996) support this view and indicate that firms might be exposed and vulnerable to conflict issues between each member due to their different arguments towards each other. Second is the lack of qualified candidates. The growing popularity and interest in hiring diverse directors may lead the board composition to be younger and have little experience. Adams and Ferreira (2009) explain in his study that qualified minority candidates may in turn having more board seats (busy) than the average directors, therefore less effective in monitoring the firm. Third is about conflict of interest and agenda pushing. Due to the lack of qualified candidates, it can be problematic when diverse directors also seat in another company board and have more interests in their own agendas instead of focusing on the firm goals.

Wahid (2019) also address potential issues, he explains that gender-based quota regulations might also in turn bring negative consequences to firm performance and financial reporting quality. For instance, if firm is only motivated by the gender-based quota regulations to cover up the lack of diversity in the board, it could reduce the qualifications of female directors compare to male directors (Campbell and Mínguez-Vera, 2008). Thus, when it comes to board discussions and decision making, this lack of qualifications might impede fruitful decision making or cause communication problems within the board. Therefore, it is a big question whether board diversity can lead to a better firm performance or financial reporting quality. Cox and Blake (1991) suggest that diversity should be managed properly, otherwise, there are some costs related to reputational damage, high employee turnover, and unproductive employees, which can affect firm performance.

#### **2.3. Audit Committee**

Following the corporate scandal in early 2000, concern regarding the effectiveness of audit committee has been raised and becoming more critical (Blue Ribbon Committee, 1999). Thiruvadi and Huang (2011) argue that the audit committee can become an external governance mechanism in order to constrain earnings management and provides conservative accounting policies. The idea that an audit committee can reduce earnings management is due to their

responsibility in monitoring the external auditors and working with management to improve financial reporting quality.

Basu (1997) and Watts (2003) explain that accounting conservatism is considered a better principle of accounting earnings as it requires high degree verification to recognize gain than losses. Therefore, it provides the shareholder with a higher quality of earnings. Due to this concern, many researchers have examined the effect of the audit committee on earnings (Klein, 2002; Xie et al., 2003; Srinidhi et al., 2011; Thiruvadi and Huang, 2011). They were suggesting that the audit committee has an impact on the firm's financial reporting quality through a different proxy, such as their independence and education.

The research on board diversity in the audit committee is not new, however, it is not as extensive as board diversity. If the theory on board diversity (gender and ethnic) holds, thus it can be concluded that diversity in the audit committee will also improve and constraint director behavior in managing earnings (Srinidhi et al., 2011). Researches by Stewarts and Munro (2007), Srinidhi et al. (2011), Thiruvadi and Huang (2011), and Ittonen et al. (2013) has examined the effect of female audit committee on financial reporting quality. They conclude that female audit committee improves monitoring and oversight and improves financial reporting quality, thus having a lower risk of financial restatement.

#### **2.4. Previous Evidence: Board Diversity on Corporate Earnings Management**

The relationships between board diversity on financial reporting quality are important for policy implications and corporate governance. If there is no relationship between financial reporting quality and board diversity, it can be suggested that firm with female directors and different ethnicity do not differ from other firms who do not have female directors and have the same ethnicity. Implying that a diverse board does not necessarily improve firm financial reporting quality. Carter et al. (2010) address this issue and show an insignificant result of the diverse board (gender and ethnic) on firm performance, explaining that there is no relationships between the diverse board and firm performance.

Despite Carter et al. (2010) argument, it could not be denied that other researchers have examined the effect of female directors and ethnic diversity on advising (firm performance) and monitoring (financial reporting quality) which in turn resulting into different perspectives (See Appendix Table 2). Through its advising role board diversity can bring either positive effect to firm performance (Carter et al., 2003; Erhardt et al., 2003; Adams and Ferreira, 2009; Nielson and Nielson, 2013; Liu et al., 2014) or negative effect (Carter et al., 2010; Ahern and

Dittmar, 2012). While, on the other side, through its monitoring role, Krishna and Parsons (2007), Barua et al. (2010), Peni and Vähämaa, (2010), Srinidhi et al., (2011), Thiruvadi and Huang (2011), Qi et al. (2018), and Wahid (2019) have examined the effect of diverse board on earnings quality, suggesting that diverse board increase firm financial reporting quality.

Furthermore, as the effectiveness of the audit committee has become more critical in ensuring the quality of financial reporting (Blue Ribbon Committee, 1999; Ittonen et al., 2013; Cohen et al. 2004). It is also important to put the attention on the effect of female and ethnic diversity in the audit committee. Similar to board diversity literatures, if diversity in the board can influence board decision making. Thus, it might be possible that female and ethnic diversity in the audit committee can affect the performance of the audit committee, thus improving the financial reporting quality. Thiruvadi and Huang (2011) and Ittonen et al. (2013), support this view and shows that female audit committee improves financial reporting quality through their independence and ethical behavior. However, it might also be possible that the effect of diverse audit committee does not hold as female audit committee do not differ from the male audit committee.

This interesting research between board diversity on corporate earnings management has attracted much attention to the academic world. While prior researchers mostly examine the effect of female directors and ethnic diversity separately and using firm performance as their measurement. There are only three literatures that address the effect of gender and ethnic diversity on financial reporting quality (e.g. Carter et al. (2003), Erhardt et al. (2003) and Carter et al. (2010)) (See Appendix Table 2). Based on prior literatures, there are still several room for improvement that can be made: (1) Little evidence on the effect of gender and ethnic diversity combine, (2) Most prior literatures focus on one single proxy of earnings management which is accruals, (3) Most prior literatures used an old sample from 1990 to early 2000 (4) Limited literature examine the effect of gender and ethnic diversity on the audit committee chair. In this thesis, I will take into account all of these gaps by using two proxy of diversity (gender and ethnic) and looking at the effect of high and low diversity. While for earnings management, this thesis will take into account accruals based earnings management, real action earnings management, and restatement as the proxy as it is more costly for the shareholders. This thesis also use more recent timeline from 2007 - 2018 in order to examine whether the effect still holds or not. Lastly, I will also investigate the effect of gender and ethnic diversity on the chair of the audit committee.

Therefore, this research paper aims to contribute to the recent debate on board diversity on earnings quality. Suggesting regulator should also focus on racial and ethnic diversity instead of just gender diversity. Moreover, since the outcomes of financial reporting are a combination of management and audit committees, not solely the management. My research will also contribute to the audit area, suggesting that the effect of diversity is not just on board of directors, but also enhance external governance of the audit committee, thus improving financial reporting quality.



### **3. Hypothesis Development**

As discussed previously, the idea that board diversity can improve the effectiveness of boards is due to the social role (nature of characteristics), leadership theory, and cultural theory. Studies on gender diversity suggest that male and female director are different in terms of their risk behavior in financial decision making. Showing that female directors are more risk-averse than male directors (Powell and Asnic, 1997; Eckel and Grossman, 2008; Gold et al., 2009), different ethical behavior (Ford and Richardson, 2013). While on ethnic diversity, Han et al. (2010) argue that different ethnic or national cultures lead to unique individual characteristics and explain the differences between countries. This view are supported by Cox and Blake (1991), Robinson and Dechant (1997), Geletkancycz (1997), Hambrick et al. (1998), and Page (2008) which address the benefits of having diverse board through their broader knowledge and fruitful discussion, which improve board decision making. Through these theories, it concludes that board diversity brings different values of knowledge, traits, and improve decision making.

Recent research on board diversity has aligned with those theories, concluding that: (1) female directors are more risk-averse in making an acquisition and debt issuance (Huang and Kisgen, 2013), (2) female directors are more independence and better monitor and advising (Adams and Ferreira, 2009; Nielson and Nielson, 2013; Liu et al., 2014), (3) diverse board are more independent and less likely to make engage in earnings management (Krishna and Parsons, 2007; Barua et al., 2010; Peni and Vähämaa, 2010; Srinidhi et al., 2011; Thiruvadi and Huang, 2011; Qi et al., 2018; Wahid, 2019). Since, prior research has suggested that board diversity are more independent, better monitor, and risk-averse. Thus, this leads to the argument that board diversity is less likely to engage in earnings management. Therefore, there should be less restatement of the financial reports. This leads to the first hypothesis:

#### **H1: Firms with a diverse board of directors improve financial reporting quality**

However, since the outcomes of financial reporting are a combination of management and audit committees, not solely the management (Wahid, 2019). It is also important to acknowledge the effect of the audit committee on financial reporting quality. As discussed before, the audit committee can improve financial reporting quality through their monitoring responsibility and their ability to constrain board of director behavior in managing earnings (Thiruvadi and Huang, 2011; Srinidhi et al., 2011; Ittonen et al., 2013). Therefore, if board diversity theory holds, the independence and different characteristics of the diverse individual can lead into

better governance. I argue that diverse individual who is the chair of the audit committee can improve financial reporting quality, thus firm will be less likely to engage in earnings management. Therefore, there should be less restatement of the financial reports. This leads to the second hypothesis:

**H2: Firms with a diverse chair in the audit committee improve financial reporting quality**

However, since the low probability of restatements might due to the lower engagement in earnings management or minimum unintentional error. It might be possible that diverse director or diverse chair audit committee are less likely to engage in earnings management, but have a higher probability of restatement, thus, rejecting the hypothesis. I explain this result as the unintentional error that was made by the management or audit committee (Dyck et al., 2010).

#### **4. Data Cleaning, Preparation, and Sample Selection**

In order to examine the effect of board diversity on corporate earnings management, the research will use publicly listed firms in the US from 2007 to 2018. The reason behind the date of research is due to data availability in the ISS (only available from 2007) and to examine the effect in recent years. I will use all the data that are provided by the university through Wharton Research Data Services (WRDS). For all financial data that will be used to construct the dependent variable and control variables will be retrieved from Compustat<sup>1</sup>. While, for the director's data and restatement will be retrieved from ISS, and AuditAnalytics, respectively. In Appendix Table 4, the sample selection process can be found. The data cleaning and preparation are divided into three parts before it finally merges into one dataset.

##### **Derivation of the sample (AuditAnalytics)**

At the beginning of the process, 140,273 firm-year observations are obtained from AuditAnalytics. After obtained, I check and deleted duplicate observations based on the "cik" and "fyear", resulting in 134,512 firm-year observations, which I saved under a new name and used later for the final sample.

##### **Derivation of the sample (Compustat)**

Once AuditAnalytics file is saved, now I start constructing the dependent and control variables using the Compustat data. At first, 161,192 firm-year observations are retrieved from the Compustat. First, I delete all missing financial data and exclude financial firms (SIC: 6000 to 6999) and utility firms (SIC: 4900 to 4999) since both industries have different regulations and firm characteristics, which is difficult to compare. This exclusion resulting in the sample to 14,026 firm-year observations. After that, I check and delete duplicate observations based on the "cik" and "fyear", resulting in 13,814 firm-year observations. Once done, I start calculating variables for constructing the dependent variables and drop the missing variables, which results in 8,900 firm-year observations. Finish calculating the variables, I start constructing the dependent and control variables that took the long process and resulting in the sample to 6,459 firm-year observations. Next, I drop all variables that are not between the research time frame (2007 to 2018), resulting in the same sample to 6,459 firm-year observations. In the end, I balanced the sample through dropping missing dependent variables

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<sup>1</sup> Variables that are collected from Compustat can be seen in chapter 5 and Appendix Table 5. All variables are within the bracket. For instance: Assets (AT), meaning that (AT) is the variables that are retrieved from the Compustat-Capital IQ database.

resulting the sample to 6,127 firm-year observations and saved under a new name and used later for the final sample.

### **Derivation of the sample (ISS)**

For the ISS, I start the process with 167,400 firm-year observations. In this process, I drop observations where the director year of service is not between year service began and year service ends, which gives me 167,329 firm-year observations. After that, I delete missing cusip, fyear, ethnicity, and “UNKNOWN” ethnicity, resulting in 142,065 firm-year observations. Once finish, I check and duplicate observations based on the “cusip”, “fyear”, and “director\_detail\_id” which results in 142,060 firm-year observations that I will use to construct the independent variables and saved under a new name and used for the final sample.

### **Derivation of the final sample (Merging Process)**

First, I merge all of the observations from the new Compustat and ISS based on the “cusip” and “fyear” resulting in the sample to 15,668 firm-year observations. Once done, I merge the result with the new AuditAnalytics file, the sample becomes 15,578 firm-year observations. Once merging all the three datasets, I collapse all of the required variables for the regression based on the “cusip” and “fyear”, resulting in the sample to decrease to 1,864 firm-year observations. Finished collapsing, I start balancing all of the samples by dropping missing variables and construct the diversity index, resulting in the final sample to become 1,795 firm-year observations, which will be used for the regression. The result of the variables definition, and descriptive statistics are presented in Appendix Tables 5, and 6, respectively.

## 5. Research Design

This chapter will discuss the research design and methodology that will be used in this thesis. The chapter consists of four parts, where the first part will explain about the independent variables. The second part will discuss about the dependent variables that I will use to measure earnings quality. Third, I will explain about the set of control variables that I will use to mitigate endogeneity and make the result more robust. Lastly, I will present the regression model based on the dependent, independent, and control variables. All variables explained in this chapter are also presented in the Variables definition in Appendix Table 5.

### 5.1. Independent Variables

In order to examine the effect of board diversity on earnings management, I need to measure the independent variables by following similar criteria developed by most of the prior researches<sup>2</sup>. In this thesis, I will use two proxy of diversity; gender diversity and ethnic diversity. I will classify *DIVERSEBOARD* a value of 1 if the board has at least one female or non-Caucasian director, 0 otherwise. While for diversity in the audit committee, I will classify *DIVERSEAUDIT* a value of 1 if the chair of the audit committee is female or non-Caucasian, 0 otherwise. Moreover, I will also use the *PERCENTAGE\_DIVERSEBOD*, which is the percentage of female or non-Caucasian director in the board. Following the director measurement, for the audit committee I will also look at the *PERCENTAGE\_DIVERSEADT*, which is the percentage of female or non-Caucasian chair audit committee.

For additional robustness test, I will also follow the research by Kramer and Konrad (2008) where they argue that firms need to have at least three female directors in order to break communication issues in order to make them feel comfortable, supported, and active. This theory is known as the critical mass of female director in the board. Liu et al. (2014) follow this suggestion and examine the effect of two female directors in the board on firm performance and finds that the effect of two female directors is more pronounced in improving firm performance.

Therefore, following Kramer and Konrad (2008) in examining the critical mass theory and in order for the result to be more robust, I add two more different proxies based on prior literatures<sup>3</sup>. If the result of *DIVERSEBOARD* and *DIVERSEAUDIT* robust, then the effect of board diversity on financial reporting quality will be more pronounced when there is more than

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<sup>2&3</sup> See Appendix Table 5. Variables definitions for more details information on which paper use the same criterion as this thesis does.

1 diverse director. Therefore, for the third proxy, I will examine the effect of *TWODIVERSEBOARD*, which is a dummy variable equal to 1 if the board has at least two female or non-Caucasian director, 0 otherwise. Lastly, is *THREEDIVERSEBOARD*, which is a dummy variable equal to 1 if the board has at three female or non-Caucasian director, 0 otherwise.

However, all of the proxies that I have mentioned above did not take into the consideration the effect of low, average, and high diversity as it only takes into consideration the presence of diverse board (gender and ethnic). Hufsi and Turgut (2012) are one of the researchers who use diversity board index to analyze the effect of board diversity on firm innovation. By using the board diversity index, they capture the differences among directors gender and ethnicity through three-level. In their research, diversity are classified into three groups by using the tercile split method. First of all, the tercile split method will divide gender and ethnic diversity into three groups (below average, average, and above average), separately<sup>4</sup>. After separated, I will give a score for each group; (1) For each company's gender or ethnic diversity that are categorized as group 1 (below the average) will get a score of 0, (2) For each company's gender or ethnic diversity that are categorized as group 2 (average) will get a score of 1, (3) For each company's gender or ethnic diversity that are categorized as group 3 (above average) will get a score of 2. In the end, the scores of the gender and ethnic diversity will be summed together, becoming board diversity index, indicating the degree of diversity. The minimum score of the diversity index is 0, indicating low gender or ethnic diversity. While the maximum score is 4, explaining that the firm is highly diverse for both gender and ethnicity. This index will be named as *DIVERSE\_INDEX*, indicating the level of diversity of the firm.

$$DIVERSE\_INDEX = XTILE\_FEMALE\_BOD\_SCORE + XTILE\_ETHNIC\_BOD\_SCORE$$

After constructing the diversity index, I will follow Erkens et al. (2018) method and construct high and low diversity index by using the median of the *DIVERSE\_INDEX*. I classify high diversity index as *H\_DIVERSEINDEX*, a dummy variable equal to 1, if the score of *DIVERSE\_INDEX* lies above the median level of *DIVERSE\_INDEX*, otherwise 0. On the other hand, I classify low diversity index as *L\_DIVERSEINDEX*, a dummy variable equal to 1, if the

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<sup>4</sup> For the proportion of sample that are categorized in the tercile split method are presented in Figure 6. Overall, based on the percentage of female director of the firm, 35% is categorized as 0 (below average), 37% categorized as 1 (average), and 28% is categorized as 2 (above average). While, for the ethnic, based on the percentage of ethnic director of the firm, 39% is categorized as 0 (below average), 30% categorized as 1 (average), and 31% is categorized as 2 (above average).

score of *DIVERSE\_INDEX* if the score lies below the median level of *DIVERSE\_INDEX*, otherwise 0.

## 5.2. Dependent Variables

After measuring the independent variables, this section will explain the model for the dependent variables. The dependent variables in this research paper are accruals based earnings management, real action earnings management, and the probability of restatement. Prior researches on board diversity on earnings management have used different proxy to measure earnings management. For instance, Krishnan and Parsons (2007) using the asymmetric timeliness of accounting earnings by Basu (1997), Barua et al. (2010) using discretionary accruals through the model by Kothari et al. (2005), Srinidhi et al. (2011) and Peni and Vähämaa, (2010) using discretionary accruals through the model that was modified by McNichols (2002), and lastly, Qi et al. (2018) using the discretionary accruals by Dechow et al. (1995), Kothari et al. (2005) and real earnings management by Roychowdhury (2006).

### Accruals Based Earnings Management

For the accruals based earnings management, I will follow Barua et al. (2010) and Ittonen et al. (2013) by using discretionary accruals as one of the proxies for earnings management. However, for the specific model, I will use the performance-matched jones model by Kothari et al. (2005). The reasons I choose the performance-matched jones model by Kothari et al. (2005) are due to; (1) preventing manipulation in the test period, (2) less likely to have type I and II errors, (3) and to control for performance (compare the effectiveness of performance matching). Kothari et al. (2005) estimate discretionary accruals by looking at the differences between the total accruals and non-discretionary accruals after controlling for performance (ROA). Below you can find the equation (1) that measure discretionary accruals for firm *i* on year *t* is defined as:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 * \frac{1}{A_{it-1}} + \alpha_2 * \frac{(\Delta REV - \Delta REC)_{it}}{A_{it-1}} + \alpha_3 * \frac{PPE_{it}}{A_{it-1}} + \alpha_4 * ROA_{it-1} + \varepsilon_{it} \quad (1)$$

Variables definition for equation (1) are presented below:

$TA_{it}$	Total Accruals (Income before extraordinary items (Compustat item “IB”) – cash flow from operations (Compustat item “OANCF” – “XIDOC”)) scaled by lagged total assets (Compustat item Lag “AT”) of firm <i>i</i> in year <i>t</i>
$A_{it-1}$	Lagged total assets (Compustat item Lag “AT”) of firm <i>i</i> in year <i>t</i>

$\Delta REV_{it}$	Change in revenue (Compustat item $\Delta$ "SALE") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$\Delta REC_{it}$	Change in receivables (Compustat item "RECCH") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$PPE_{it}$	Net property, plant, and equipment scaled (Compustat item "PPEGT") by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$ROA_{it-1}$	Net income (Compustat item Lag "NI") + interest expense (Compustat item "XINT") scaled by total assets (Compustat item "AT") of firm $i$ in year $t$

Total accruals consist of non-discretionary accruals and discretionary accruals, which can be calculated by subtracting cash flow from operations from the net income before extraordinary items. I will look at the discretionary accruals, as it is solely based on the management decisions only. In order for me to attain discretionary accruals, I will estimate coefficients  $\alpha_0, \alpha_1, \alpha_2, \alpha_3$  and  $\alpha_4$  by doing cross-sectional regression per industry and year, using the two-digit SIC code with a minimum of 20 firms available on each SIC code. While, for the discretionary accruals are basically the difference between total accruals and non-discretionary accruals, which in here is defined as the residual or error ( $\varepsilon_{it}$ ) term, representing the quality of financial reporting. The higher the discretionary accruals, indicate that firms engage in accruals based earnings management, thus lowering the quality of financial reporting.

### **Real Action Earnings Management**

Zang (2012) argue that firms might substitute each method of earnings management, depending on the firm's competitive status, financial condition, monitoring from investors/analysts, and tax expenses. Therefore, aside from discretionary accruals, I will also examine the effect of board diversity on real action earnings management. It might be possible that firm do not manipulate earnings using discretionary accruals but manage earnings through real action earnings management.

For real action earnings management, I will use three real action earnings management proxies that have been used by researchers widely, namely Cohen et al. (2008), Cohen and Zarowin (2010), Zang (2012), and Qi et al. (2018). These researchers used Roychowdhury (2006) real action earnings management model, which are: (1) Abnormal level of cash flows from operations (CFO), (2) Abnormal levels of production costs, and (3) Abnormal discretionary expenses.



For the abnormal cash flows from operations, below you can find the equation (2) that measure abnormal cash flows from operations for firm  $i$  on year  $t$  is defined as:

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 * \frac{1}{A_{it-1}} + \alpha_2 * \frac{SALE_{it}}{A_{it-1}} + \alpha_3 * \frac{\Delta SALE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (2)$$

Variables definition for equation (2) are presented below:

<b><math>CFO_{it}</math></b>	Cash flows from operations (Compustat item "OANCF") of firm $i$ in year $t$
<b><math>A_{it-1}</math></b>	Lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
<b><math>SALE_{it}</math></b>	Net sale (Compustat item "SALE") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
<b><math>\Delta SALE_{it}</math></b>	Lagged changes in the net sale (Compustat item "SALE") of firm $i$ in year $t$

Roychowdhury (2006) explains that the abnormal cash flow from operations is the difference between the actual CFO and the "normal" CFO. The actual CFO is the dependent variable of the regression model in equation (2), while the "normal" CFO is the linear function of  $SALE_{it}$  and  $\Delta SALE_{it}$  in the model. Abnormal cash flows from operations are being used as a proxy of real action earnings management in order to examine sales manipulation. The lower the abnormal cash flows from operations, indicate that firms engage in real action earnings management through sales manipulation.

For the second measurement of real action earnings management is the abnormal production costs. Following Roychowdhury (2006), equation (3) shows the regression model to estimate abnormal production costs for firm  $i$  on year  $t$ :

$$\frac{PRODCOST_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 * \frac{1}{A_{it-1}} + \alpha_2 * \frac{SALE_{it}}{A_{it-1}} + \alpha_3 * \frac{\Delta SALE_{it}}{A_{it-1}} + \alpha_4 * \frac{\Delta SALE_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (3)$$

Variables definition for equation (3) are presented below:

<b><math>PRODCOST_{it}</math></b>	Production costs (Cost of goods sold (Compustat item "COGS") + changes in Inventory (Compustat item "INVT")) scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
<b><math>A_{it-1}</math></b>	Lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
<b><math>SALE_{it}</math></b>	Net sale (Compustat item "SALE") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$

$\Delta SALE_{it}$	Change in net sales (Compustat item $\Delta$ "SALE") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$\Delta SALE_{it-1}$	Lagged changes in the net sale (Compustat item "SALE") of firm $i$ in year $t$

For the abnormal production costs, following Roychowdhury (2006), I define production costs as  $PRODCOST_{it} = COGS_{it} + \Delta INV_{it}$ , as mentioned in the table above. Once defining the production costs, I will look at the difference between abnormal PRODCOST and normal PRODCOST from the linear function of  $SALE_{it}$ ,  $\Delta SALE_{it}$ , and  $\Delta SALE_{it-1}$  in the model. The abnormal production costs will look at the manipulation of lowering the cost of goods sold (COGS) to improve margin through overproduction. The higher the abnormal production cost explains that firms engage in real action earnings management through inventory overproduction that reduces the cost of goods sold (COGS) and increase reported earnings.

For the third measurement of real action earnings management is the abnormal discretionary expenses. Similar to the previous models, I will follow Roychowdhury (2006), equation (3) shows the regression model to estimate abnormal discretionary expenses for firm  $i$  on year  $t$ :

$$\frac{DISEXP_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 * \frac{1}{A_{it-1}} + \alpha_2 * \frac{SALE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (4)$$

Variables definition for equation (4) are presented below:

$DISEXP_{it}$	Discretionary expenses (Selling, general, and administrative expenses (Compustat item "XSGA") + research and development expenses (Compustat item "XRD") + advertising expenses (Compustat item "XAD")) scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$A_{it-1}$	Lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$
$SALE_{it}$	Net sale (Compustat item "SALE") scaled by lagged total assets (Compustat item Lag "AT") of firm $i$ in year $t$

Similar to CFO and PRODCOST, the abnormal discretionary expenses also expressed through the linear function of  $SALE_{it}$  in the model. The abnormal discretionary expenses will look at the manipulation of discretionary expenses through the reduction of discretionary expenditures. The lower the abnormal discretionary expenses shows that firms engage in real action earnings management through the manipulation of reducing discretionary expenditures to increase reported earnings.

For three models of real action earnings management, similar to the discretionary accruals model, I will be doing cross-sectional regression per industry and year, using the two-digit SIC code with a minimum of 20 firms available on each SIC code. The abnormal cash flows from operations, abnormal production costs, and the abnormal discretionary expenses are the residual or error ( $\varepsilon_{it}$ ) term of each regression model in equation (2), (3) and (4), respectively.

### **Restatement**

To conclude, after understanding the two different types of earnings management. It is also essential to consider another proxy for earnings management as accruals-based earnings management and real action earnings management suffers from several weaknesses. In this thesis, I choose to use restatement as another proxy for earnings management. Abbot et al. (2012) and Wahid (2019) argue that restatement is the ultimate proxy for earnings management. Restatement indicates poor financial reporting quality and very costly to the shareholder. Dechow et al. (2010) explain the three consequences of a restatement. First, restatement is associated with high turnover (Desai et al., 2006; Hennes et al., 2008). Second, on average, after the announcement of the restatement, firm value will decrease by an average of 20% (Desai et al., 2006). Lastly, a firm that restates its earnings is most likely followed by lawsuit or litigation (Palmrose and Scholz, 2004). Therefore, if internal corporate governance is effective, the board of directors and the audit committee should have been able to detect and prevent financial misconduct. However, instead of using irregular restatement, I will use regular restatement as the data for the year 2007 to 2018 are limited for the irregular restatement, which will reduce the dataset even smaller.

### **5.3. Control Variables**

In this research paper, in order to mitigate endogeneity that has been addressed by prior researchers, I will employ several control variables. There are a lot of control variables that can be used for this thesis. However, after conducting extensive research, I decided to use nine control variables that have been used by prior literatures that are related to board diversity on corporate earnings management. These nine control variables are chosen based on their frequency and suggestion that has been addressed in the literature. For more detail's definition, computation, and prior literatures that have used these control variables, please see Appendix Table 5.

I will control for financial condition of the firm using five different proxies, which are  $LEVERAGE_{it}$  (total liabilities divided by total assets),  $LOSS_{it}$  (dummy variable equal to 1 if

the net income in year  $t$  is negative, 0 otherwise),  $ROA_{it}$  (earnings before extraordinary income to average total assets),  $OCF_{it}$  (cash flow from operations divided by lagged total assets), and  $LITIGATION_{it}$  (dummy variable equal to 1 if the firm operates in a high-litigation industry). A firm that has high leverage will have more debt covenants. Therefore, management might engage in earnings management to prevent any violation of the debt covenant or bankruptcy. Not to mention that poor-performing firms might engage in income increasing or income decreasing accruals (DeAngelo et al., 1994; Sweeney, 1994; DeFond and Jimbalvo, 1994; Roychowdhury, 2006; Francis and Wang, 2008). Thus, I can expect to have a positive sign for  $LEVERAGE_{it}$ ,  $LOSS_{it}$ ,  $LITIGATION_{it}$ , and  $ROA_{it}$ , on the other hand, I can expect a negative relationship for  $OCF_{it}$ . While for the growth of the firm, I will control it using two different proxies, which are  $SGROWTH_{it}$  (% changes in revenue from the previous year) and  $MTB_{it}$  (market value divided by book value of equity) representing the growth of the company, Meek et al. (2007) argue that high growth firms tend to be less transparent, therefore may engage in greater earnings management. Therefore, I expect  $MTB_{it}$  and  $SGROWTH_{it}$  to have a positive relationship with earnings management. For the firm characteristic, I will control using  $FIRMSIZE_{it}$  (natural logarithm of total assets), large firm tends to have a lower level of accruals and has a negative relationship to earnings management since governance structure is high, lower information asymmetry, and subject to greater monitoring by auditors (Meek et al., 2007; Francis and Wang, 2008; Adams and Ferreira, 2009). However, it might also be possible that large firm faces more pressure and have the tendency to manage earnings using income increasing or decreasing accruals (Pincus and Rajgopal, 2002). Thus, the effect of  $FIRMSIZE_{it}$  is unclear. Lastly, I will add another control for the audit using the  $BIG4DUMMY_{it}$  (dummy variable equal to 1 if the firm is audited by the Big 4), I control for the auditor since the firm that is audited by the big 4 audit firms tend to have higher earnings quality (Becker et al., 1998; Srinidhi et al., 2011). Thus, there will be a negative relationship with earnings management.

However, it is essential to note that the regression model might be exposed to endogeneity. Adams and Ferreira (2009) and Wahid (2019) acknowledge that gender-diverse boards that are less likely to experience restatement might be subject to omitted correlated variables. Therefore, in order to mitigate this, I will follow prior research on female directorships and adding fixed effects to the regressions that will be addressed in the regression model section.

#### **5.4. Regression Model**

In this part, I will conclude the independent, dependent, and control variables section through the regression models. The regression model will test the effect of board diversity on financial

reporting quality, measured by accruals based earnings management, real action earnings management, and the probability of restatement. The regression model is the OLS-regression model for the accruals based earnings management and real action earnings management, while for the restatement, I will follow Wahid (2019) by employing a logit regression. Below you can find the regression model in equation (5):

$$FRQ_{it} = \beta_0 + \beta_1 DIVERSEBOARD_{it} + \beta_2 DIVERSEAUDIT_{it} + \beta_{3-11} CONTROLS_{it} + \beta_{12} FIXEDEFFECTS + \varepsilon_{it} \quad (5)$$

Based on the regression model in equation (5), *FRQ* measured by using five different proxies which are accruals based earnings management, real action earnings management, and the probability of restatement; (1) *DAC* which is discretionary accruals of the performance-matched jones model representing the accruals based earnings management; (2) *ABN\_CFO*, the abnormal cash flows from operations; (3) *ABN\_PRODCOST*, the abnormal production costs; and (4) *ABN\_DISEXP*, the abnormal discretionary expenses and lastly (5) *RESTATEMENT*, which is the probability of restatement. The coefficient  $\beta_1$  and  $\beta_2$  represents the diversity in the board of directors and the audit committee, respectively. If the theory of board diversity in chapter 2 holds. I expect these coefficients to be negative for *DAC*, *ABN\_PRODCOST*, and *RESTATEMENT*, explaining that diversity in the board and audit committee improves financial reporting quality through income decreasing accruals, not engage in an overproduction that can reduce the cost of goods sold (COGS), and have a lower probability of financial restatement, thus accepting the hypothesis. While for the *ABN\_CFO* and *ABN\_DISEXP*, I expect the coefficient of  $\beta_1$  and  $\beta_2$  to be positive, explaining that diversity in the board and audit committee improves financial reporting quality by not engaging in sales manipulation and manipulating discretionary expenditures that can increase performance for a short amount of time. Moreover, in order to make the results more robust and preventing endogeneity, I will use several control variables that I have explained in the previous section.

More than control variables, since the data that I retrieve and construct are panel data, I will follow prior literatures regression model<sup>5</sup> and use fixed effects in order to control for endogeneity. Different fixed effects have been employed from different literatures. However, based on the summary of the regression model<sup>6</sup>. First, I decided not to use country fixed effects since most prior literatures that used country fixed effects are using a global sample, and

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<sup>5&6</sup> Regression model summary of prior literatures are presented in Appendix Table 3.

because I use only publicly listed U.S. firms, I don't need to control for country fixed effects. Second, for the firm or industry fixed effects, I will use industry fixed effects as it also captures the variation in each firm. In other words, the industry fixed effect is perfectly collinear with the firm fixed effect, thus including both are not necessary (Gujarti and Porter, 2017). In addition, I will also control for year fixed effects. The reason to use two-way specification is to see the variation between each industry and specific year. It might be possible that a specific industry will behave differently on financial reporting quality even when having a diverse board. While for the year fixed effect, it can control for possible changes in earnings management over a certain period of time (Peni and Vähämaa, 2010).

## 6. Results

This chapter will mainly discuss about the empirical result of the regression model that is presented in chapter 5. However, this chapter will also include descriptive statistics, correlation matrix test, and multicollinearity test. All regression results can be seen in Appendix Table 8 to 17.

### 6.1. Descriptive Statistics

Table 6 in the Appendix shows the descriptive statistics for all variables that will be used in this thesis. The sample that is used in this thesis is all publicly listed U.S firms from the year 2007 to 2018. From the descriptive statistics, it can be seen that the number of samples is 1,795 firm-year observations, compare to prior literatures, this result has fewer observations than the average<sup>7</sup>. Panel A shows the main dependent variables used in this thesis. The mean of the discretionary accruals and restatement are -0.0109 and 0.0758, respectively. For abnormal cash flows from operations, abnormal production costs, and abnormal discretionary expenses are 0.0606, -0.0167, and -0.0605, respectively. While the mean of the discretionary accruals should be 0, this result is considered acceptable as it is not very large. The reasons for the mean of discretionary accruals that are not close to 0 are because I construct the variables before merging all of the databases, and during the merging process, there are a large number of observations that are deleted.

In Table 6 Panel B, I report the summary statistics of the independent variables. For the variables diverse board and audit, 84.51% of the firm atleast have one female or non-Caucasian director, on the other hand, there only 16.66% female or non-Caucasian chair audit committee. The number has increased from time to time, as it shows on Appendix Figure 1, explaining that the number of the firm that own one female or non-Caucasian director increase from 6% in 2008 to 96% in 2018. While, for the audit committee, the number had increased from 9% in 2008 to 23% in 2018. Our results are similar to a survey by Spencerstuart in 2019, explaining that diversity in the board has been taken seriously over the past decade. For the variables percentage of diverse board, on average of the total board, each firm has a composition of 24.41% diverse director. It explains, there are only 2.4 diverse directors out of 10 directors in a firm, which is relatively small. For the audit committee, the number is even smaller, showing on average of 4.72% of the total audit committee. These numbers are also presented in Appendix Figure 2.

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<sup>7</sup> Prior literatures are presented in Appendix Table 2. Moreover, it is also discussed in chapter 2 in this thesis.

For the additional robustness test, I add two variables which are diverse board (2), which is a dummy variable equal to 1 if there is atleast two female or non-Caucasian director on the board. For the other one, diverse board (3) is a dummy variable equal to 1 if there is atleast three female or non-Caucasian director on the board. From the descriptive statistics, it can be seen that on average diverse board (2) has a mean of 58.83%, explaining that almost 60% of the firm in the U.S publicly listed companies has two females or non-Caucasian director on the board. While, on the contrary, we can start to see the different result on diverse board (3), where there is only a mean of 36.55%, showing that the number of public listed U.S companies that has more than three directors that are female or non-Caucasian is only 36.55%, which is low compare to the previous one. These numbers are also presented in Figure 3.

Furthermore, for the diversity index, the mean number is 1.84 out of 4, comparing the mean to the median, we can see that the mean is slightly lower than the threshold in determining high diverse board which is two. Looking at the high diverse index and low diverse index, the mean are 0.6217, and 0.3784, respectively. By looking at the time-series of the index from 2008 to 2018 in Figure 5, it can be seen that the number of high diverse index has increased from time to time offsetting the low diverse index, confirming the previous explanation that diversity in the board has increased from time to time. Lastly, for the control variables in Panel D, the most crucial part is to look for outliers based on the descriptive statistics. Most data in Panel C has been winsorized by cutting the top and bottom 1% in order to prevent any outliers. Therefore, I can suggest that there is no need to winsorize the variables again as it seems acceptable.

In Appendix Table 7, I present the correlation matrix of the variables. From the correlation matrix, it can be seen that there are no variables that have a correlation of one, and most of the results based on the correlation matrix are relatively low. However, it is important to note that the correlation matrix only tests the correlation between each other variable, but do not take into account multiple regression. Another way to test for multicollinearity is through the variance inflation factor (VIF) test. Appendix Table 18 presents the variance inflation factor (VIF) test for each regression analysis. From the variance inflation factor (VIF) test, the results show that all regression results scored below 10.00, concluding there is no multicollinearity.

## **6.2. Regression Result**

In the regression results, I will explain the effect of diverse board and diver chair audit committee on corporate earnings management. This section will be divided into three parts. The first part will explain the regression results on the effect of diverse boards on earnings



management. The second part will explain the regression results on the effect of diverse chair audit committee on earnings management. While the last part, I will discuss all of the findings based on the first and second part and link it with the literature review.

### **6.3. Regression Result: Diverse Board on Earnings Management**

In this section, I will test the first hypothesis, which is the effect of diverse board in improving financial reporting quality. To test the hypothesis, I will use seven independent variables that have been explained in the previous chapter. I will divide this section into three main parts. First, I will explain the effect of board diversity in general using *DIVERSEBOARD*, *PERCENTAGE\_DIVERSEBOD*, and *DIVERSE\_INDEX* as the main independent variables. Second, I will examine the critical mass theory of diverse directors by using *TWODIVERSEBOARD* and *THREEDIVERSEBOARD* as the main independent variables. Lastly, I will use *H\_DIVERSEINDEX* and *L\_DIVERSEINDEX* to further look at the effect of low and high diversity in the board.

All regression models presented from Table 8 to 16 use industry and year fixed effects with robust standard error. Normality check has been done through kernel density test and p-p plot test<sup>8</sup>, while for heteroskedasticity are controlled by using robust standard errors. From the p-p plot tests, the regression residuals are slightly off the line but can be considered as normal. Furthermore, the kernel density also shows that the results follow a “normal” pattern.

#### **Board Diversity**

The first regression result is presented in Table 8, where I look at the effect of *DIVERSEBOARD* on corporate earnings management. For all model, the regression models capture 1,795 firm-years observations with adjusted  $R^2$  of 49.7%, 61.9%, 23.7%, and 12.6% for model (1), (2), (3) and (4), respectively. For model (1), (2), (4), and (5), I do not find significant regression results. However, in model (3), I find positive statistical significance at 10% level (T-Stat: 1.85) between *DIVERSEBOARD* and abnormal production costs with 0.016 coefficient, explaining that *DIVERSEBOARD* improve reported earnings by lowering the cost of goods sold (COGS) through overproduction, which later decrease financial reporting quality. This result is also followed by the negative and statistically significant result in the control variables where firm with high *LEVERAGE<sub>it</sub>*, *OCF<sub>it</sub>*, *LOSS<sub>it</sub>*, *MTB<sub>it</sub>*, *LITIGATION<sub>it</sub>*, and *BIG4DUMMY<sub>it</sub>* tend not to manage earnings through abnormal production costs. While on the

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<sup>8</sup> Results of the Kernel Density and P-P Plot test are not presented in the thesis. However, it is written and has been check in the STATA Code.

other side, firm with high  $SGROWTH_{it}$  tend to manage earnings through abnormal production costs, as it has positive result and statistically significant.

The second regression result is the effect of *PERCENTAGE\_DIVERSEBOD* on corporate earnings management, the regression result is presented in Table 9. For all model that are presented, the model capture 1,795 firm-years observations with adjusted  $R^2$  of 49.7%, 62.2%, 23.8%, and 12.8% for model (1), (2), (3) and (4), respectively. For model (1), (3), and (5), I do not find significant regression results. On the other hand, I find significant results on model (2), and (4), explaining that firm manage earnings through abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses, respectively. For model (2), which is the abnormal cash flow from operations, I find a negative coefficient of -0.0003 and statistically significant at 1% level (T-Stat: -2.98). The result from model (2) explains that firm tend to manage earnings through sales manipulation, which increase cash inflow of sales in the expense of margin. In model (4), I find positive coefficient of 0.0004 and statistically significant at 10% level (T-Stat: 1.76) between *PERCENTAGE\_DIVERSEBOD* on abnormal discretionary expenses, explaining that firm tend to manage earnings downward through increasing discretionary expenses. From this regression, it can be seen already that firm tend to decrease the quality of financial reporting quality through abnormal cash flow from operations.

For the third regression result of board diversity, I will follow Hafsi and Turgut (2012) by using the constructed *DIVERSE\_INDEX* as the main independent variables. The regression result can be seen in Table 12. From the table, it can be seen that it has some similarities with the *PERCENTAGE\_DIVERSEBOD* where the model (2) and (3) that represents real action earnings management are having negative and positive statistical significant, respectively. While for the model (1), (4), and (5) are insignificant. Starting from model (2), by using the diversity index, I find larger coefficient of -0.005 and statistically significant at 1% level (T-Stat: -3.18), explaining that firm tend to improve reported earnings through sales manipulation that increase cash inflow in the expense of margins, leading into a decrease in financial reporting quality. For the abnormal production costs in model (3), I find a positive result at 10% significant level (T-Stat: 1.86) with a coefficient of 0.006. Both results explain that firms improve reported earnings through sales manipulation and overproduction that leads to a decrease of COGS and better margins. For the third regression result, almost similar to the previous one, the model capture 1,795 firm-years observations with adjusted  $R^2$  of 49.7%, 62.2%, 23.8%, and 12.7% for model (1), (2), (3) and (4), respectively. Similar to the second

regression result, firms tend to decrease the quality of financial reporting quality through abnormal cash flow from operations and abnormal production costs.

### **Board Diversity Critical Mass Theory**

For an additional tests, I will follow the suggestion by Kramer and Konrad (2008) by looking at the critical mass theory of board diversity, explaining that firms need to have at least three female directors in order to break communication issues. The fourth regression result is *TWODIVERSEBOARD*, where I examine the effect of two female or non-Caucasian director in the board. The result of the fourth regression model is presented in Table 10 where it captures 1,795 firm-years observations with adjusted  $R^2$  of 49.8%, 62.1%, 23.7%, and 12.7% for model (1), (2), (3) and (4), respectively. The empirical result in Table 10 shows that model (1) and (2) are statistically significant, while others do not. The result explains that firm with more than two diverse directors manage earnings through income increasing accruals and abnormal cash flow from operations by sales manipulation. Model (1) shows a positive coefficient of 0.006 and statistically significant at a 5% level (T-Stat: 2.00). While for the model (2) shows a negative coefficient of -0.009 with a 1% significant level (T-Stat: -2.70). These results show evidence that firm manage both accruals based earnings management and real action earnings management by substituting each other, supporting Zang (2012) argument. It is also evident that financial reporting quality decrease as firm manage reported earnings through income increasing accruals and cash inflow through sales manipulation.

For the fifth regression result, I present the result in Table 11. The fifth regression examines the effect of *THREEDIVERSEBOARD*, which is a dummy variable equal to 1 if the firm has atleast three female or non-Caucasian director. This regression result capture 1,795 firm-years observations with adjusted  $R^2$  of 49.4%, 62.3%, 23.7%, and 12.8% for model (1), (2), (3) and (4), respectively. The result shows in the model (2), (4), and (5) are statistically significant, while other models are not. Starting from the model (2), which is the abnormal cash flow from operations, it shows a negative coefficient of 0.014 and statistically significant at 1% level (T-Stat: -3.90), explaining that firm with three diverse directors manage cash inflow from sales through sales manipulation in the expense of margins. However, on the other side, it can be seen that model (4) shows that firm manage earnings downward through increases in abnormal discretionary expenses where it shows a positive coefficient of 0.021 and statistically significant at 10% level (T-Stat: 2.06), explaining that firm manage discretionary accruals upward while cash flow operations are being manipulated. Lastly, in the model (5), the probability of restatement of a firm that has three diverse directors are lower by 50.5% and

statistically significant at 5% level (T-Stat: -2.11). Apparently, despite having a low probability of restatement, firm with atleast three diverse directors also manage earnings through abnormal cash flow from operations that increase reported earnings through sales manipulation.

### **Diversity Index Theory**

As mentioned in the previous chapter, while recent research on board diversity on corporate earnings management has focused on the effect of board diversity on corporate earnings management by using dummy variables, the percentage of diverse director or the Blau index. Only a few researchers have examined the effect of diverse director using low and high diversity index. In this thesis, I combine Hafsi and Turgut (2012) *DIVERSE\_INDEX* and Erkens et al. (2018) method in classifying high and low diversity through the diversity index. First, I will examine the effect of *H\_DIVERSEINDEX* on corporate earnings management. This regression result is presented as the sixth regression result and shown in Table 13 where it captures 1,795 firm-years observations with adjusted  $R^2$  of 49.8%, 62.0%, 23.8%, and 12.6% for model (1), (2), (3) and (4), respectively. From Table 13, model (4) and (5) are insignificant, while the remaining others are significant. Model (1) explain a positive coefficient of 0.006 and statistically significant at 10% level (T-Stat: 1.93), explaining that firm with high diversity index tend to manage earnings upward through income increasing accruals. On the other side, it can be seen that model (2) and (3) shows that firm also manage earnings through real action earnings management as shown on the abnormal cash flow from operations and abnormal production costs with the coefficient of -0.007 (T-Stat: -2.21) and 0.013 (T-Stat: 1.87), respectively, firm manage reported earnings through sales manipulation and overproduction that increase reported earnings in the expense of earnings quality.

For the last regression result (seventh), is to examine the effect of *L\_DIVERSEINDEX*. The regression result is presented in Table 14, where it captures 1,795 firm-years observations with adjusted  $R^2$  of 49.5%, 62.4%, 23.7%, and 12.6% for model (1), (2), (3) and (4), respectively. While the effect of high diversity decreases financial reporting quality, for low diversity, I find contrasting results. The effect of low diversity resulted in the model (1) with a coefficient of -0.006 and statistically significant at a 10% level (T-Stat: -1.93), explaining that low diverse firm tend to manage earnings downward through income decreasing discretionary accruals. For model (2), I also find contrasting result prior to the previous regression result, where I find positive abnormal cash flow from operation with a coefficient of 0.007 and statistically significant at 5% level (T-Stat: 2.21), explaining that firm manage cash inflow downward which reflect better financial reporting quality. Moreover, it can also be seen that model (3)

shows a negative coefficient of -0.013 and statistically significant at a 10% level (T-Stat: -1.87), explaining that firm do not manage abnormal production costs by not overproducing which reflect better financial reporting quality. Aside from these models, I do not find statistically significant on model (4) and (5).

#### **6.4. Regression Result: Diverse Chair Audit Committee on Earnings Management**

In this section, I will test the second hypothesis, where I will look at the effect of diverse chair audit committee on financial reporting quality. I will test the hypothesis by using *DIVERSEAUDIT* and *PERCENTAGE\_DIVERSEADT* and not looking at the effect of two and three diverse chair audit committee since most firms only has one chair audit committee. For the first regression result can be seen in Table 15, where I use *DIVERSEAUDIT* as the main independent variable. From the regression result, it can be seen that model (3) and (4) are significant, while others don't. The regression result capture 1,795 firm-years observations with adjusted  $R^2$  of 49.4%, 61.9%, 23.8%, and 12.8% for model (1), (2), (3) and (4), respectively. Model (3) shows a positive coefficient of 0.017 and statistically significant at a 5% level (T-Stat: 2.13), explaining that firms with diverse chair audit committee manage earnings through overproduction that decreases COGS (abnormal production costs), thus improve reported earnings. While model (4) that use abnormal discretionary expenses as the dependent variable shows a negative coefficient of -0.023 and statistically significant at 5% level (T-Stat: -2.45), explaining that firm tend to manage earnings through decreasing discretionary expenses that lead into better earnings.

For the second regression result, I will use *PERCENTAGE\_DIVERSEADT* as the main independent variable. The regression result is presented in Table 16 where the result captures 1,795 firm-years observations with adjusted  $R^2$  of 49.6%, 62.0%, 23.8%, and 12.8% for model (1), (2), (3) and (4), respectively. Similar to the *DIVERSEAUDIT*, I find statistical significance on model (3) and (4), while others don't. From model (3), similar to previous regression result, I find positive coefficient of 0.001 with statistical significance at 5% level (T-Stat: 2.25), explaining that firm with diverse chair audit committee manage earnings through overproduction that decreases COGS (abnormal production costs) and improve reported earnings. Moreover, in the model (4), which use abnormal discretionary expenses as the dependent variable also shows negative coefficient of -0.001 and statistically significant at 5% level (T-Stat: -2.06), explaining that firm tend to manage earnings through decreasing discretionary expenses, thus increase reported earnings.

## 6.5. Discussion and Findings

Based on the results that have been discussed on the previous section. First, I find an evidence that firm tend to manage earnings through real action earnings management instead of accruals based earnings management. From three regression results explain in the “Board Diversity” section, a firm with diverse directors engage in real action earnings management, which resulted in improve reported earnings at the expense of financial reporting quality. Furthermore, after performing additional tests suggested by Kramer and Konrad (2008), the results supported the first evidence, contradicts with Kramer and Konrad (2008) argument. When performing the additional tests, results suggested that diverse board also manage reported earnings through accruals based earnings management and real action earnings management substituting each other, supporting Zang (2012). The results reject the critical mass theory, where the additional diverse director in the board does not necessarily lead to an improvement of financial reporting quality.

However, as the number of diverse board has increased from time to time, questions has been raised whether the effect of high and low diversity remains the same. All of the proxies that I have used on the previous regression results did not take into consideration the effect of low and high diversity as it only takes into consideration the presence of diverse board (gender and ethnic). While recent research on board diversity has focused on the effect of board diversity on financial reporting quality. By combining Hafsi and Turgut (2012) and Erkens et al. (2018) method, I construct low diversity index and high diversity index. The evidence of the diversity index shows that firms with high diversity index decrease the quality of financial reporting by improving reported earnings through income increasing discretionary accruals, abnormal cash flow from operations, and abnormal production costs. On the contrary, firms with low diversity index tend to improve financial reporting quality as reflected on income decreasing discretionary accruals, abnormal cash flow from operations, and abnormal production costs. This evidence shows that firms with high diversity does not necessarily improve earnings quality, while firms with low diversity tend to improve financial reporting quality through conservative accounting methods.

While prior researchers were mostly favoring the benefits of having diverse board through its advising and monitoring (e.g. Krishna and Parsons, 2007; Barua et al., 2010; Peni and Vähämaa, 2010, Srinidhi et al., 2011; Thiruvadi and Huang, 2011; Qi et al., 2018; Wahid, 2019). Other researchers also find the opposite direction (e.g. Carter et al., 2010; Ahern and Dittmar, 2010). This evidence of low and high diversity can be explained and supported

through Cox and Blake (1991), and Adams and Ferreira (2007) argument that diverse directors come with costs and benefits and vary across firms. Ferreira (2010) explain some of the costs of diverse directors are; lack of communication, lack of qualified candidates, and conflict of interests between boards. Another evidence were shown by Adams and Funk (2012) where they find that female director are more risk-loving than male directors. In this thesis, the result of *H\_DIVERSEINDEX* might be explained through the costs of diverse directors, which in turn lead to bad management decisions, thus decreasing the quality of financial reporting. Moreover, Prat (2002) explains that the optimal board is homogenous as it can maximize coordination.

In the end, based on the evidence and the theoretical explanations that has been explained, it can be concluded that the first hypothesis is accepted. By using recent timeframe, the effect of diverse board does not bring positive effect when only looking at the presence of diverse board (gender and ethnic). Additionally, using the critical mass theory of diverse board, the negative effect of diverse board becoming more significant, where firm with more than two or three diverse board improve reported earnings through income increasing accruals and real action earnings management, substituting each other. However, despite all of the negative effect of diverse directors, firm with diverse board is most likely to improve financial reporting quality when the number of diverse board are not too high, thus accepting the first hypothesis. While it is not really clear on what is the perfect number of diverse director, but it is evident that too much diversity in the board do not necessarily lead into better management decisions and better financial reporting quality.

For the chair audit committee, based on the explanations in the previous section, it can be seen that diverse chair audit committee does not improve financial reporting quality. Diverse chair audit committee engage in real action earnings management by increasing income through abnormal production costs and abnormal discretionary expenses. In this thesis, I do not look at the critical mass theory or either using the tercile split method as each firm only chooses one chair audit committee. Therefore, the second hypothesis can be rejected as diverse chair audit committee do not improve financial reporting quality. While the results contradict with Srinidhi et al. (2011), Thiruvadi and Huang (2011), and Ittonen et al. (2013). The results are aligned with Sun et al. (2011) who find no evidence on the effect of female audit committee in constraining earnings management. Despite rejecting the hypothesis, it is important to consider that this thesis only looks at the effect of female director in as a chair of audit committee, while other researchers were looking more on the member of the audit committee.

Aside from the theoretical evidence that explains the results, other explanations why the results can be different from prior researchers are due to the recent timeframe that has been used in this thesis (2008 – 2018), small sample (1,795 firm-years observations), and lastly the endogenous nature of diversity. First, this thesis uses a recent timeframe (2008 – 2018), while prior researchers sample were mostly coming from 1990 to early 2000<sup>9</sup>. Second, since this thesis takes into account real action earnings management, the number of observations drops drastically to 1,795 firm-years observations. Third, despite large sets of control variables used in this research, it could not be denied that diverse directors and endogenous. Big firm tend to recruit more diverse directors, and diverse directors tend to apply to big firm.

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<sup>9</sup> See Appendix Table 2



## **7. Conclusion, Contributions, Limitations, and Further Research**

In this chapter, I will mainly discuss four main topics which are: conclusion, contributions, limitations, and further research that can be done.

### **7.1. Conclusion**

Although large literatures have addressed the positive effect of diverse board. Only few have examined the effect of low and high diversity in the board. In this thesis, I provide an evidence that high diverse board and low diverse board behave differently. High diverse board appears to manage earnings through accruals based earnings management and real action earnings management. The results are aligned with Zang (2012) and Qi et al. (2018) argument that firm tend to substitute earnings management methods when necessary. On the contrary, low diverse board appears to be more conservative and improve financial reporting quality. These findings is consistent with the gender and ethnic diversity literatures, which shows that diverse director behaves differently and has the ability to challenge other directors decisions. However, it is important to note that the effectiveness of diverse board could only be obtained through certain number of board composition. The research suggests that the critical mass theory of three diverse board by Kramer and Konrad (2008) has been rejected, therefore, it is still unclear what is the perfect number to maintain the effectiveness of diverse board. Lastly, the research finds negative effect of diverse chair audit committee in constraining earnings management.

### **7.2. Contribution**

The results of this study contributes to existing academic literature and have important implications for public policy makers. First, the study provides an evidence on the relation between diverse board on earnings quality by looking at accruals based earnings management and real action earnings management. It provides an implication for various stakeholders such as regulators, internal audits, and auditors in assessing the quality of financial reporting. Second, the study explains the effectiveness of diverse board in a large or small group to the extend of financial reporting quality. The results show that high diverse board does not necessarily lead into better management decisions and better financial reporting quality. Thus, one can argue that diversity in the board can be a double edged sword, and one can question the effectiveness of gender-based policy regulations. Third, the study provides another evidence of gender and ethnic diversity combine, while most prior literatures focus on gender diversity research, it could not be denied that ethnic diversity also contributes in board decision making processes, which can affect financial reporting quality. Lastly, the study provides a new evidence of diversity in the board by using a more recent sample 2007 – 2018. The

implications of the study explain that the effectiveness of board diversity can only be obtained when it not too much.

### **7.3. Limitations**

Despite all of the efforts and challenges in conducting this research, certain limitations might explain the differences of these findings compared with other prior researchers. The first caveat of the study is the inability to correct endogeneity of the relation between diverse directors and earnings management. Wahid (2019) express this issue stating that firm with diverse boards are less likely to restate earnings, she used firms geographic characteristic (female population in the firms) as an instrumental variable analysis to mitigate endogeneity. The reasons why this thesis did not follow this approach are due to data limitation of firms geographic characteristics (female population in the firms) and the lack of data transparency that is provided by Wahid (2019). However, this thesis already controls for many variables in order to mitigate the endogeneity problems.

Second, restatement could occur due to unintentional errors and fraud. Classifying restatement into regular restatement and irregular restatement are important. In this study, restatement can be considered as an inefficient measurement of earnings quality as it is exposed to type I errors. It might be possible that firm restates earnings due to unintentional errors instead of managing earnings, but the results considered the firm to have bad earnings quality (type I errors).

Third, the study might be subjected to measurement error arising at the stage of data retrieval from Compustat, ISS, and AuditAnalytics. There are a lot of different literatures that addressed different variables that are needed to be retrieved to construct the dependent variables, therefore, it is not really clear which one is the correct one. In this thesis, I address these issues by extensive research and comparing it with different literatures to ensure the accuracy in the data retrieval. However, despite all of that, it might be possible that the study are exposed to these potential errors.

### **7.4. Further Research**

There are some avenues for future research that can be done. First, there might be other factors or criteria that can affect financial reporting quality (e.g. diverse board education, age, expertise, etc). Second, while this research only takes into account the effect of diverse board, it would also be interesting to examine the level of the busyness of diverse board on financial reporting quality. In the end, despite the positive effect of diverse board, it is still really unclear on how does diverse board improve governance and resulted in better financial reporting

quality. Adams and Ferreira (2009) address these issues and conclude that female directors are better monitors as they attend more meetings than male directors. Therefore, another avenue is to examine the effect of diverse boards on governance factors by using more recent samples (2007 – 2018) that can explain whether the positive effect holds or not.

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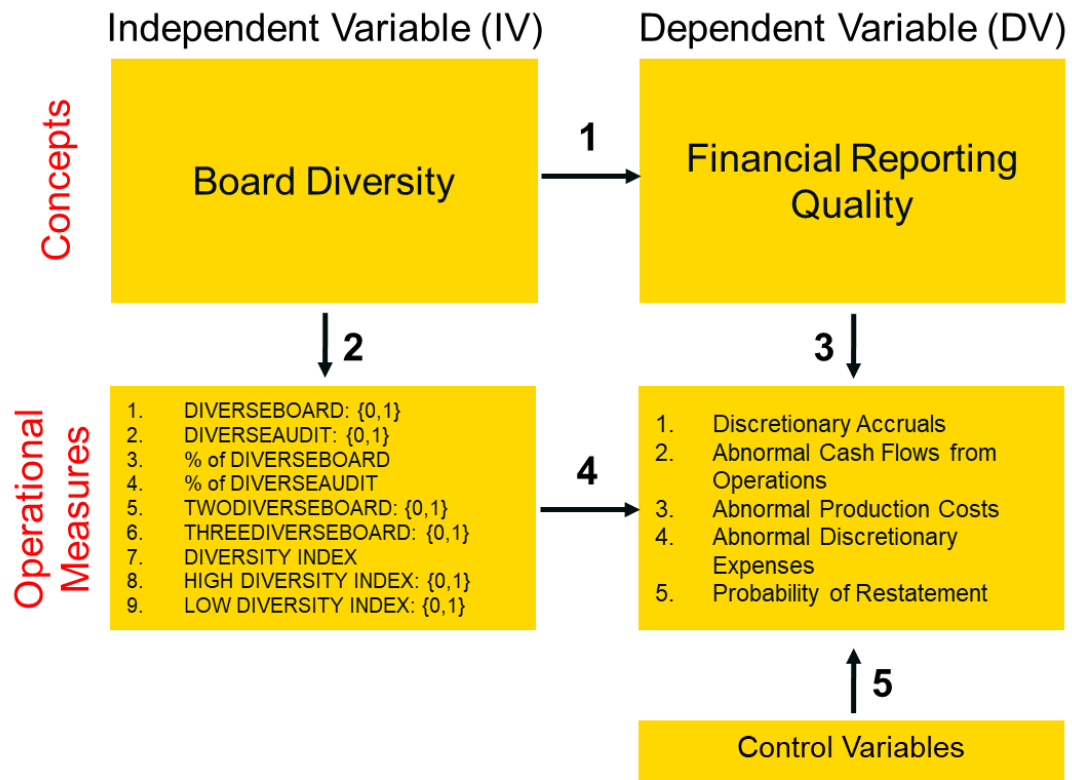
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## 9. Appendix

Figure 1. Libby Boxes



**Table 1. Literature overview of board diversity (male vs female or ethnic diversity)**

Authors	Title	Theory/Area	Male	Female
			Theory explanations of diversity (if differences is not available)	
Eagly (1987)	Sex differences in social behavior: a social role interpretation	Social role	Strong, independent, competent, assertive, and aggressive.	Friendly, nurturing, passive, and emotional.
Eagly (1990)	Gender and leadership style: A meta-analysis	Leadership	Male is autocratic and more directive.	Female is democratic and more participative.
Cox and Blake (1991)	Managing cultural diversity: implications for organizational competitiveness	Value-in diversity hypothesis	<p><b>Cost Argument:</b> If diversity is managed well, a firm can make diversity as an asset and cost advantages. However, if managed poorly will increase the cost as employee turnover increases.</p> <p><b>Resource-Acquisition Argument:</b> Diversity can improve a firm reputation in the job market, thus attracting many high knowledge workers to join the firm.</p> <p><b>Marketing Argument:</b> Diversity can improve firm marketing strategy in the local market and attract local consumers.</p> <p><b>Creativity Argument:</b> Heterogenous team provides different perspectives to the team, thus enhancing creativity.</p> <p><b>Problem-Solving Argument:</b> Different individual experience provides a different approach to solve problems, thus improving decision making.</p>	

<b>System Flexibility Argument:</b> Different characteristic/social roles between male and female compromise each other weaknesses.				
Eagly et al. (1995)	Gender and the effectiveness of leaders: A meta-analysis	Leadership effectiveness	Male can be less effective/less productive than female.	Female is not less effective/more productive than male.
Robinson and Dechant (1997)	Building a business case for diversity	Strategic management	Diversity enhances innovation through market understanding based on each cultural background, higher quality of problem-solving skills due to different perspectives, and building effective global relationships.	
Powell and Ansic (1997)	Gender differences in risk behaviour in financial decision-making: An experimental analysis	Risk decision making	Risk seeker based on two surveys: insurance and exchange rate	Risk-averse based on two surveys: insurance and exchange rate
Carless (1998)	Gender differences in Transformational Leadership: An Examination of Superior, Leader, and Subordinate Perspectives	Leadership	Transactional leadership, directive, task-oriented, and controlling.	Transformational leadership, participative.
Hambrick et al. (1998)	When Groups Consist of Multiple Nationalities: Towards a New Understanding of the Implications	Strategic management	Team with different nationality can bring diverse knowledge and more active in group discussions, generate new ideas which foster creativity	
Rosenthal (2000)	Gender styles in state legislative committees: Raising their voices in resolving conflict	Conflict resolution	Male is more assertive and competitive.	Female is more cooperative and collaborative.

Pounder and Coleman (2002)	Women – Better Leaders than men? In general and educational management it still “all depends”	Leadership	Transactional leadership: Male directors are more rewards based/performance-based.	Transformational leadership: Female directors are more relationships oriented and inspirational to their subordinates.
Eckel and Grossman (2008)	Men, Women and Risk Aversion: Experimental Evidence	Risk decision making	Risk seeker	Risk-averse
Huang and Kisgen (2013)	Gender and corporate finance: Are male executives overconfident relative to female executives?	Risk decision making	Male directors are more likely to make acquisitions and debt issuances. Investors reacts negatively to a male director’s debt issuance. Suggesting that male director is overconfident and make a value-destroying acquisition.	Female directors are less likely to make acquisitions and debt issuance. Investor react positively to female director’s debt issuance

**Table 2. Literature overview of board diversity on firm performance or financial reporting quality**

<b>Authors</b>	<b>Title</b>	<b>Sample Timeframe</b>	<b>Setting</b>	<b>Dependent Variables</b>	<b>Main findings</b>
Carter et al. (2003)	Corporate governance, board diversity, and firm value	1997	U.S	Tobin's-Q	Board diversity (gender and ethnic) improves firm value (Tobin's-Q).
Erhardt et al. (2003)	Board of director diversity and firm financial performance	1993-1998	U.S	ROA, ROI	Board diversity (gender and ethnic) are associated with higher ROI and ROA.
Krishna and Parsons (2007)	Getting to the bottom line: an exploration of gender and earnings quality	1996-2000	U.S	Asymmetric timeliness and conservatism, Persistence, Accruals, Smoothness, Loss avoidance tendency	Female directors bring a positive effect on earnings quality. However, other than senior management, diversity do not improve earnings quality
Doupnik (2008)	Influence of Culture on Earnings Management: A Note	Undisclosed	Global (31 countries)	Accruals, Earnings smoothing	Insignificant results between culture and earnings management through accruals. However, countries with that have low uncertainty avoidance tend to smooth earnings. While countries with

					high individualistic characters tend not to smooth earnings.
Adams and Ferreira (2009)	Women in the boardroom and their impact on governance and performance	1996-2003	U.S	Attendance, Tobin's-Q, ROA, CEO Turnover, Stock Price	Female directors bring a positive effect on firm performance, especially on a firm with weak corporate governance. Moreover, female director also more diligent and have better attendance
Ittonen et al. (2013)	Female Auditors and Accruals Quality	2005-2007	Finnish, Swedish, U.S	Accruals	Female audit partners have lower abnormal accruals, implying that female auditors constrain earnings management.
Carter et al. (2010)	The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance	1998-2002	U.S	Tobin's-Q, ROA	Insignificant result in the interaction of board diversity (gender and ethnic) on financial performance.
Peni and Vähämaa (2010)	Female executives and earnings management	2003-2007	U.S.	Accruals	Female executives (CFOs) engage in income decreasing discretionary accruals (conservative).
Han et al. (2010)	A cross-country study on the effects of national culture on earnings management	1992-2003	Global (32 countries)	Accruals	Cultural values (individualism) are positively associated with earnings management are more pronounced in

					firms with strong investor protection regime due to optimism characteristic of the country.
Barua et al. (2010)	CFO gender and accruals quality	2004 & 2005	U.S	Accruals	Female CFOs are less aggressive and cautious by reporting lower absolute abnormal accruals.
Ye et al. (2010)	Does top executives gender diversity affect earnings quality? A large sample analysis of Chinese listed firms	2001-2006	China	Accruals, Earnings persistence, Stock returns association	Small differences between male and female directors on earnings quality.
Srinidhi et al. (2011)	Female directors and earnings quality	2001-2007	Global	Accruals, Analyst forecast (Meeting benchmark or not)	Female directors and female audit committees increase accruals quality due to better monitoring role.
Thiruvadi and Huang (2011)	Audit committee gender differences and earnings management	2003	U.S	Accruals	Female directors on the audit committee mitigate earnings management through the negative (income-decreasing) discretionary accruals



Ahern and Dittmar (2012)	The changing of the boards: The impact on firm valuation of mandated female board representation	2001-2009	Norway	Stock price, Tobin's-Q	Female directors bring a substantial decline in Tobin's-Q. Investor perception regarding female directors is negative as stock price decline after the policy implications.
Nielson and Nielson (2013)	Top management team nationality diversity and firm performance: a multilevel study	2001-2008	Swiss	ROA	Diverse team (nationality) contributes in improving firm performance, especially in the longer interval, international firm and environment
Liu et al. (2014)	Do women directors improve firm performance in China?	1999-2011	China	ROS, ROA	Female directors have a positive association with firm performance. The result is more pronounced when there are >2 female directors on the board.
Gray et al. (2015)	Earnings Management in Europe Post IFRS: Do Cultural Influences Persist?	2000-2010	Global (14 Countries)	Accruals,	Accountants and managers in individualistic countries tend to manage earnings more (more aggressive) than countries that have more uncertainty avoidance characteristics.
Lara et al. (2017)	The monitoring role of female directors on accounting quality	2003-2012	U.K	Accruals	Male and Female directors do not differ in terms of earnings quality on firms that not discriminate. However, in

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					general, female directors improve earnings quality.
Qi et al. (2018)	The impact of top management team characteristics on the choice of earnings management strategies: evidence from China	2000-2015	China	Accruals and Real action earnings management	Female executives are less likely to engage in earnings management (accruals and real action earnings management).
Wahid (2019)	The effects and the mechanisms of board gender diversity: evidence from financial manipulation	2000-2010	U.S	Restatement (Regular and Irregular)	Firm with diverse gender boards less engage in financial manipulation (lower financial restatement).

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**Table 3. Regression Model Summary**

<b>Authors</b>	<b>Industry FE</b>	<b>Year FE</b>	<b>Firm FE</b>	<b>Country FE</b>	<b>Instrumental Variables</b>
Carter et al. (2003)	Yes	No	No	No	Yes
Erhardt et al. (2003)	No	No	No	No	No
Krishna and Parsons (2007)	No	No	No	No	No
Doupnik (2008)	No	No	No	No	No
Adams and Ferreira (2009)	Yes	No	Yes	No	Yes
Carter et al. (2010)	No	Yes	Yes	No	No
Peni and Vähämaa (2010)	Yes	Yes	No	No	No
Han et al. (2010)	No	No	No	Yes	No
Barua et al. (2010)	No	No	No	No	No
Ye et al. (2010)	Yes	Yes	No	No	No
Srinidhi et al. (2011)	No	Yes	No	No	No

Thiruvadi and Huang (2011)	No	No	No	No	No
Ahern and Dittmar (2012)	No	Yes	Yes	No	Yes
Ittonen et al. (2013)	Yes	Yes	No	Yes	No
Nielson and Nielson (2013)	No	No	No	No	No
Liu et al. (2014)	No	Yes	Yes	No	Yes
Gray et al. (2015)	Yes	Yes	No	Yes	No
Lara et al. (2017)	No	Yes	No	No	No
Qi et al. (2018)	Yes	Yes	Yes	No	No
Wahid (2019)	Yes	Yes	Yes	No	Yes
<b>Summary of “Yes”</b>	<b>8</b>	<b>11</b>	<b>6</b>	<b>3</b>	<b>5</b>
<b>Summary of “No”</b>	<b>12</b>	<b>9</b>	<b>14</b>	<b>17</b>	<b>15</b>

**Table 4. Sample Selection Process**

<b>Derivation of the sample (AuditAnalytics)</b>	
Beginning of the sample	140,273
Firm-years after deleting duplicate data	134,512
<b>Final sample after constructing all variables needed (Final)</b>	<b>134,512</b>

<b>Derivation of the sample (Compustat)</b>	
Beginning of the sample	161,192
Firm-years after deleting missing data, financial industry (SIC: 6000-6999) and utility industry (SIC: 4900-4999)	14,026
Firm-years after deleting duplicate data	13,814
Firm-years after constructing and deleting variables for the dependent variables	8,900
Firm-years after calculating the dependent variables	6,459
Firm-years after dropping all variables that are not between 2007 – 2018 (Final)	6,459
<b>Final sample after constructing all variables needed (Final)</b>	<b>6,127</b>

<b>Derivation of the sample (ISS)</b>	
Beginning of the sample	167,400
Firm-years after dropping observations where the director year is not between year service began and year service ends	167,329
Firm-years after deleting missing cusip, fyear, ethnicity, and UNKNOWN ethnicity	142,065
Firm-years after deleting duplicate data	142,060
<b>Final sample after constructing all variables needed (Final)</b>	<b>142,060</b>

<b>Derivation of the sample (Merging Process)</b>	
Firm-years after merging Compustat and ISS	15,668
Firm-years after merging the result of Compustat and ISS with AuditAnalytics	15,578
Firm-years after collapsing all variables based on cusip and fyear	1,864
Firm-years after deleting all missing financial data and constructing diversity index	1,795
<b>Final sample for regression (Final)</b>	<b>1,795</b>

**Table 5. Variables Definitions**

<b>Variables Name</b>	<b>Definitions</b>	<b>Prior Literatures</b>	<b>Source</b>
<b>I. Dependent Variables</b>			
DAC	Discretionary accruals, representing the financial reporting quality, measured by the error ( $\varepsilon_{it}$ ) of equation (1) regression	Barua et al. (2010), Ittonen et al. (2013)	Compustat
ABN_CFO	Abnormal cash flow from operations, representing real action earnings management through sales manipulation, measured by the error ( $\varepsilon_{it}$ ) term of equation (2) regression	Qi et al. (2018)	Compustat
ABN_PROD COST	Abnormal production costs, representing real action earnings management through overproduction, measured by the error ( $\varepsilon_{it}$ ) term of equation (3) regression	Qi et al. (2018)	Compustat
ABN_DISEXP	Abnormal discretionary expenses, representing real action earnings management through discretionary expenditures, measured by the error ( $\varepsilon_{it}$ ) term of equation (4) regression	Qi et al. (2018)	Compustat
RESTATEMENT	Dummy variable equals to 1 if the firm financial statement is restated, 0 otherwise.	Wahid (2019)	AuditAnalytics

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## II. Independent Variables

DIVERSEBOARD	Dummy variable equal to 1 if the board has at least one female or non-Caucasian director, 0 otherwise.	Carter et al. (2003), Erhardt et al. (2003) and Carter et al. (2010), Srinidhi et al. (2011), Liu et al. (2014)	ISS
PERCENTAGE_DIVERSEBOD	Percentage of female or non-Caucasian director in the board.	Carter et al. (2003), Erhardt et al. (2003); Liu et al. (2014)	ISS
DIVERSEAUDIT	Dummy variable equal to 1 if the chair of the audit is female or non-Caucasian director, 0 otherwise.	Stewarts and Munro (2007), Srinidhi et al. (2011), Thiruvadi and Huang (2011), and Ittonen et al. (2013)	ISS
PERCENTAGE_DIVERSEADT	Percentage of female or non-Caucasian chair committee.	Thiruvadi and Huang (2011), Ittonen et al. (2013)	ISS
TWODIVERSEBOARD	Dummy variable equal to 1 if the board has at least two female or non-Caucasian director, 0 otherwise.	Liu et al. (2014)	ISS
THREEDIVERSEBOARD	Dummy variable equal to 1 if the board has at least three female or non-Caucasian director, 0 otherwise.	Liu et al. (2014)	ISS
DIVERSE_INDEX	Summed of the tercile split method that has been score for both gender and ethnic diversity.	Hufsi and Turgut (2012)	ISS



	Ranging from 0 to 4, explaining low diversity to high diversity.		
H_DIVERSEINDEX	Dummy variable equal to 1, if the score of <i>DIVERSE_INDEX</i> lies above the median level of <i>DIVERSE_INDEX</i> , otherwise 0.	Erkens et al. (2018)	ISS
L_DIVERSEINDEX	Dummy variable equal to 1, if the score of <i>DIVERSE_INDEX</i> lies below the median level of <i>DIVERSE_INDEX</i> , otherwise 0.	Erkens et al. (2018)	ISS

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### III. Control Variables

LEVERAGE	The financial leverage of the firm, measured by total liabilities (Compustat item “DLTT” + Compustat item “DLC”) divided by total assets (Compustat item “AT”).	Peni and Vähämaa (2010); Barua et al. (2010); Srinidhi et al. (2011); Thiruvadi and Huang (2011); Ittonen et al. (2013); Qi et al. (2018); Wahid (2019)	Compustat
ROA	Return on assets, measured by the earnings before extraordinary income (Compustat item “IB”) divided by average total assets (Compustat item “AT”).	Barua et al. (2010); Ye et al. (2010); Ittonen et al. (2013); Lara et al. (2017); Wahid (2019)	Compustat
OCF	Operating cash flow, measured by cash flow from operations (Compustat item “OANCF” –	Barua et al. (2010); Srinidhi et al. (2011); Thiruvadi and Huang (2011); Ittonen et al. (2013)	Compustat

	“XIDOC”) divided by lagged total assets (Compustat item Lag“AT”).		
LOSS	Dummy variable equals to 1 if the net income (Compustat item “NI”) in year $t$ is negative, 0 otherwise.	Peni and Vähämaa (2010); Srinidhi et al. (2011); Thiruvadi and Huang (2011); Ittonen et al. (2013); Lara et al. (2017); Qi et al. (2018)	Compustat
LITIGATION	Dummy variable equal to 1 if the firm operates in a high-litigation industry, 0 otherwise (high-litigation industries are industries with SIC codes of: pharmaceuticals (2833–2836), computers (3570–3577), electronics (3600–3674), retail (5200–5961), and software(7370–7370)).	Srinidhi et al. (2011); Thiruvadi and Huang (2011)	Compustat
SGROWTH	The growth of the firm, measured by % changes in revenue (Compustat item $\Delta$ “REVT”) from previous year.	Peni and Vähämaa (2010); Barua et al. (2010); Ittonen et al. (2013); Qi et al. (2018)	Compustat
MTB	Market-to-book ratio, measured by the market value (Compustat item “PRCC_F” * “CSHO”) divided by book value of equity (Compustat item “CEQ”).	Peni and Vähämaa (2010); Barua et al. (2010); Srinidhi et al. (2011); Thiruvadi and Huang (2011); Ittonen et al. (2013);	Compustat

FIRMSIZE	The natural logarithm of firm total assets (Compustat item “AT”).	Lara et al. (2017); Qi et al. (2018); Wahid (2019) Krishna and Parsons (2007); Adams and Ferreira (2009); Peni and Vähämaa (2010); Barua et al. (2010); Srinidhi et al. (2011); Ittonen et al. (2013); Lara et al. (2017); Qi et al. (2018); Wahid (2019)	Compustat
BIG4AUDIT	Dummy variable equals to 1 if the firm are audited by the Big 4.	Barua et al. (2010); Srinidhi et al. (2011); Thiruvadi and Huang (2011); Ittonen et al. (2013)	Compustat

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**Table 6. Descriptive Statistics**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>Min</b>	<b>25<sup>th</sup></b>	<b>50<sup>th</sup></b>	<b>75<sup>th</sup></b>	<b>Max</b>
<b>Panel A: Dependent Variables</b>								
Discretionary Accruals	1,795	-0.0109	0.0757	-0.6104	-0.0442	-0.0050	0.0290	0.3806
Abnormal Cash Flows from Operations	1,795	0.0606	0.0936	-0.4503	0.0036	0.0552	0.1123	0.4267
Abnormal Production Costs	1,795	-0.0167	0.1440	-0.5961	-0.1045	-0.0212	0.0591	0.9214
Abnormal Discretionary Expenses	1,795	-0.0605	0.1896	-1.3391	-0.1658	-0.0736	0.0414	0.8564
Restatement	1,795	0.0758	0.2647	0.0000	0.0000	0.0000	0.0000	1.0000
<b>Panel B: Independent Variables</b>								
Diverse Board (1)	1,795	0.8451	0.3619	0.0000	1.0000	1.0000	1.0000	1.0000
Diverse Audit (1)	1,795	0.1666	0.3727	0.0000	0.0000	0.0000	0.0000	1.0000
Percentage of Diverse Board	1,795	24.4128	17.5220	0.0000	12.5000	25.0000	33.3333	100.0000
Percentage of Diverse Audit	1,795	4.7277	11.2958	0.0000	0.0000	0.0000	0.0000	100.0000
Diverse Board (2)	1,795	0.5883	0.4923	0.0000	0.0000	1.0000	1.0000	1.0000
Diverse Board (3)	1,795	0.3655	0.4817	0.0000	0.0000	0.0000	1.0000	1.0000
Diversity Index	1,795	1.8429	1.2019	0.0000	1.0000	2.0000	3.0000	4.0000
High Diverse Index	1,795	0.6217	0.4851	0.0000	0.0000	1.0000	1.0000	1.0000

Low Diverse Index	1,795	0.3783	0.4851	0.0000	0.0000	0.0000	1.0000	1.0000
<b>Panel C: Additional Information</b>								
Board Size	1,795	8.2635	2.9694	1.0000	7.0000	9.0000	10.0000	19.0000
Audit Size	1,795	3.4361	1.1030	1.0000	3.0000	3.0000	4.0000	8.0000
<b>Panel D: Control Variables</b>								
Leverage	1,795	0.2172	0.2009	0.0000	0.0531	0.1978	0.3158	2.2310
ROA	1,795	0.0689	0.0994	-1.0990	0.0362	0.0756	0.1124	0.6983
Operating Cash Flow	1,795	0.1347	0.0808	-0.1940	0.0816	0.1255	0.1796	0.4504
Loss	1,795	0.1499	0.3570	0.0000	0.0000	0.0000	0.0000	1.0000
Litigation	1,795	0.4362	0.4961	0.0000	0.0000	0.0000	1.0000	1.0000
Sales Growth	1,795	0.0695	0.1762	-0.6012	-0.0090	0.0605	0.1350	1.3316
Market-to-Book Ratio	1,795	3.3820	7.4751	-52.2190	1.8869	2.9562	4.8607	35.4157
Firm Size	1,795	7.8037	1.5707	4.3547	6.5880	7.6647	8.8625	11.7089
Big 4	1,795	0.9281	0.2583	0.0000	1.0000	1.0000	1.0000	1.0000

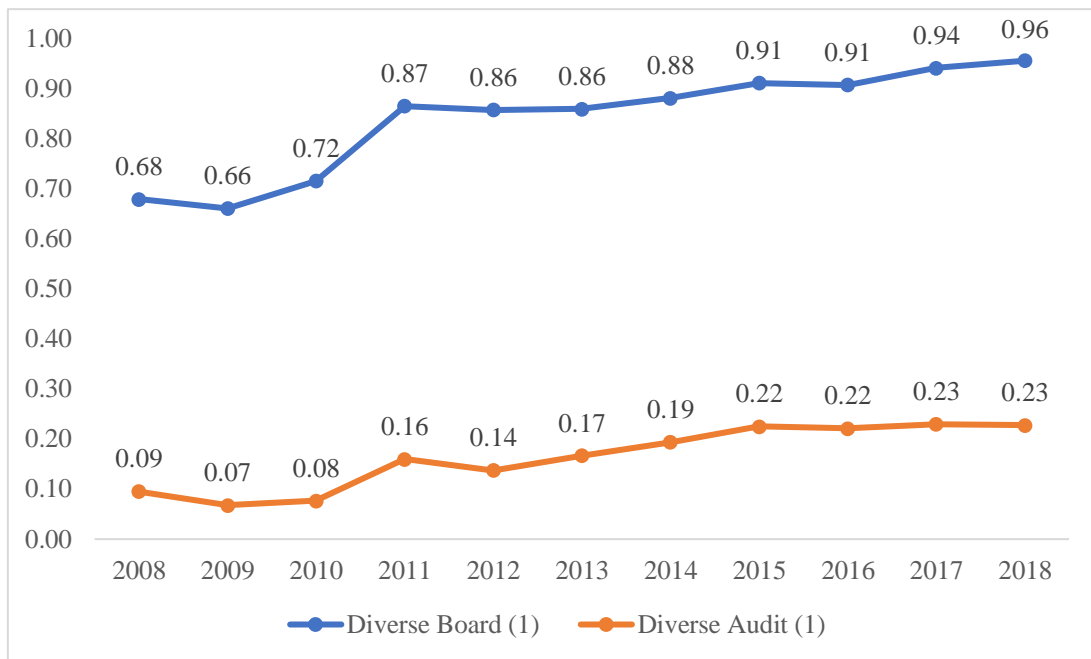
This table shows descriptive statistics for the characteristics of our sample firms. The sample consists of 1,795 firm-year observations between 2008 to 2018. Companies are included in the sample if they are listed in the U.S. The sample excludes financial firms (SIC: 6000 to 6999) and utility firms (SIC: 4900 to 4999). The table presents the mean, standard deviation, minimum (min), 25<sup>th</sup> percentile, 50<sup>th</sup> percentile (median), 75<sup>th</sup> percentile, and maximum (max) for each variable. Panel A shows the dependent variables that will be used for the regression. Panel B shows the independent variables that will be used for the regression. Panel C shows additional information. While Panel D shows the control variables that will be used for the regression. All dependent and control variables have been winsorized at the top and bottom 1% level.

Table 7. Correlation Matrix

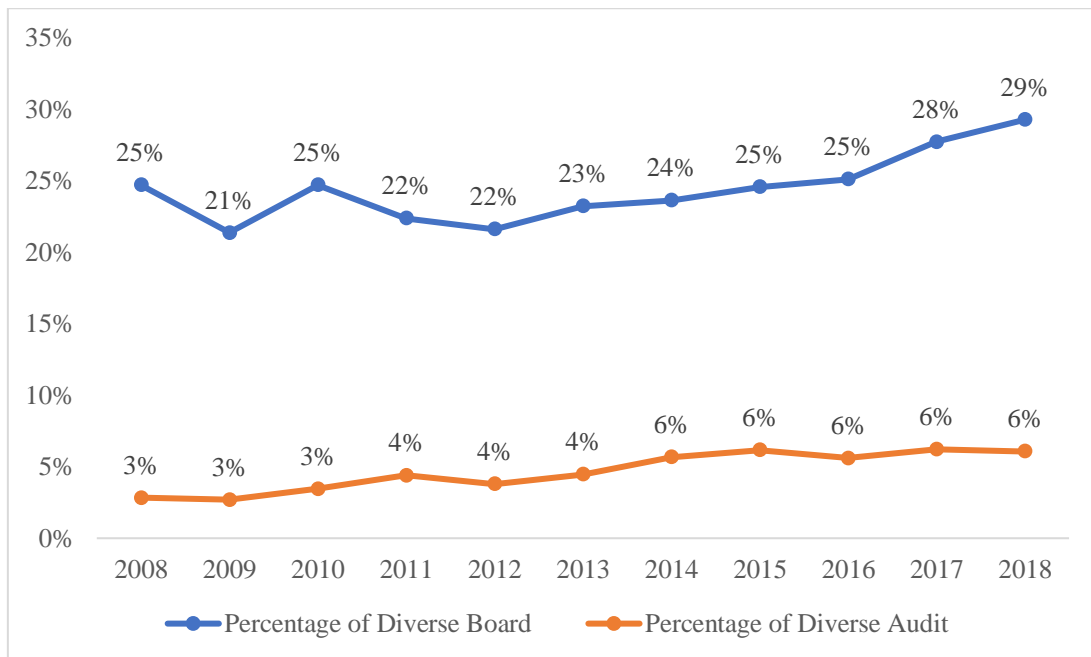
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	
(1) DAC	1.00																							
(2) RESTATEMENT	0.01	1.00																						
(3) ABN_CFO	<b>-0.32</b>	-0.04	1.00																					
(4) ABN_PROD COST	<b>0.21</b>	<b>0.09</b>	<b>-0.43</b>	1.00																				
(5) ABN_DISEXP	<b>-0.13</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.72</b>	1.00																			
(6) DIVERSEBOARD	-0.01	-0.01	<b>0.07</b>	0.01	<b>-0.06</b>	1.00																		
(7) 2DIVERSEBOARD	<b>0.07</b>	-0.03	0.05	-0.01	<b>-0.05</b>	<b>0.51</b>	1.00																	
(8) 3DIVERSEBOARD	<b>0.06</b>	<b>-0.05</b>	0.00	0.02	-0.02	<b>0.33</b>	<b>0.64</b>	1.00																
(9) DIVERSEAUDIT	0.04	-0.02	0.03	0.04	<b>-0.07</b>	<b>0.19</b>	<b>0.29</b>	<b>0.26</b>	1.00															
(10) %_DIVERSEBOD	0.03	-0.04	-0.02	0.03	0.02	<b>0.60</b>	<b>0.59</b>	<b>0.58</b>	<b>0.25</b>	1.00														
(11) %_DIVERSEADT	0.02	-0.03	0.02	0.04	<b>-0.06</b>	<b>0.18</b>	<b>0.26</b>	<b>0.21</b>	<b>0.94</b>	<b>0.24</b>	1.00													
(12) DIVERSE_INDEX	<b>0.05</b>	-0.04	0.03	0.02	-0.02	<b>0.66</b>	<b>0.73</b>	<b>0.71</b>	<b>0.29</b>	<b>0.79</b>	<b>0.26</b>	1.00												
(13) H_DIVERSEINDEX	0.04	-0.05	0.05	0.01	-0.04	<b>0.55</b>	<b>0.75</b>	<b>0.59</b>	<b>0.24</b>	<b>0.72</b>	<b>0.23</b>	<b>0.83</b>	1.00											
(14) L_DIVERSEINDEX	-0.04	0.05	<b>-0.05</b>	-0.01	0.04	<b>-0.55</b>	<b>-0.75</b>	<b>-0.59</b>	<b>-0.24</b>	<b>-0.72</b>	<b>-0.23</b>	<b>-0.83</b>	-1.00	1.00										
(15) LEV	0.01	-0.02	-0.03	0.00	<b>-0.07</b>	<b>0.22</b>	<b>0.31</b>	<b>0.30</b>	<b>0.09</b>	<b>0.20</b>	<b>0.05</b>	<b>0.29</b>	<b>0.25</b>	<b>-0.25</b>	1.00									
(16) ROA	<b>0.21</b>	-0.01	<b>0.37</b>	<b>-0.23</b>	<b>-0.06</b>	<b>0.11</b>	<b>0.13</b>	<b>0.13</b>	<b>0.08</b>	<b>0.09</b>	<b>0.07</b>	<b>0.15</b>	<b>0.12</b>	<b>-0.12</b>	<b>0.08</b>	1.00								
(17) OCF	<b>-0.38</b>	-0.01	<b>0.65</b>	<b>-0.43</b>	<b>0.10</b>	0.03	-0.02	-0.02	-0.01	0.02	0.00	0.02	0.04	-0.04	<b>-0.07</b>	<b>0.55</b>	1.00							
(18) LOSS	<b>-0.17</b>	0.02	<b>-0.26</b>	<b>0.10</b>	<b>0.10</b>	<b>-0.10</b>	<b>-0.12</b>	<b>-0.11</b>	<b>-0.12</b>	<b>-0.08</b>	<b>-0.10</b>	<b>-0.13</b>	<b>-0.10</b>	<b>0.10</b>	<b>0.05</b>	<b>-0.62</b>	<b>-0.41</b>	1.00						
(19) LITIGATION	<b>-0.10</b>	<b>-0.06</b>	<b>0.13</b>	<b>-0.13</b>	<b>0.11</b>	-0.01	-0.02	-0.01	-0.01	0.03	0.01	-0.03	-0.03	0.03	-0.03	0.03	<b>0.15</b>	0.00	1.00					
(20) SGROWTH	<b>-0.15</b>	0.04	<b>0.12</b>	<b>-0.07</b>	0.03	-0.02	<b>-0.10</b>	<b>-0.09</b>	-0.02	-0.02	0.00	<b>-0.06</b>	-0.04	0.04	<b>-0.10</b>	<b>0.17</b>	<b>0.26</b>	<b>-0.11</b>	0.04	1.00				
(21) MTB	-0.03	0.02	<b>0.09</b>	<b>-0.10</b>	<b>0.05</b>	0.04	0.02	0.00	<b>0.05</b>	-0.01	0.04	0.01	0.00	0.00	<b>-0.15</b>	<b>0.06</b>	<b>0.11</b>	<b>-0.06</b>	<b>-0.06</b>	<b>0.07</b>	1.00			
(22) FIRMSIZE	0.02	0.00	<b>0.13</b>	0.00	<b>-0.09</b>	<b>0.31</b>	<b>0.45</b>	<b>0.51</b>	<b>0.20</b>	<b>0.29</b>	<b>0.14</b>	<b>0.47</b>	<b>0.36</b>	<b>-0.36</b>	<b>0.34</b>	<b>0.17</b>	0.01	<b>-0.17</b>	0.00	-0.03	<b>0.07</b>	1.00		
(23) BIG4	-0.02	0.01	0.04	<b>-0.05</b>	<b>0.08</b>	<b>0.19</b>	<b>0.15</b>	<b>0.19</b>	0.03	<b>0.15</b>	0.00	<b>0.19</b>	<b>0.13</b>	<b>-0.13</b>	<b>0.11</b>	0.04	<b>0.05</b>	<b>-0.09</b>	0.02	<b>-0.09</b>	0.00	<b>0.26</b>	1.00	

*Bold means that the coefficient are significant at 10%, 5% or 1% level.*

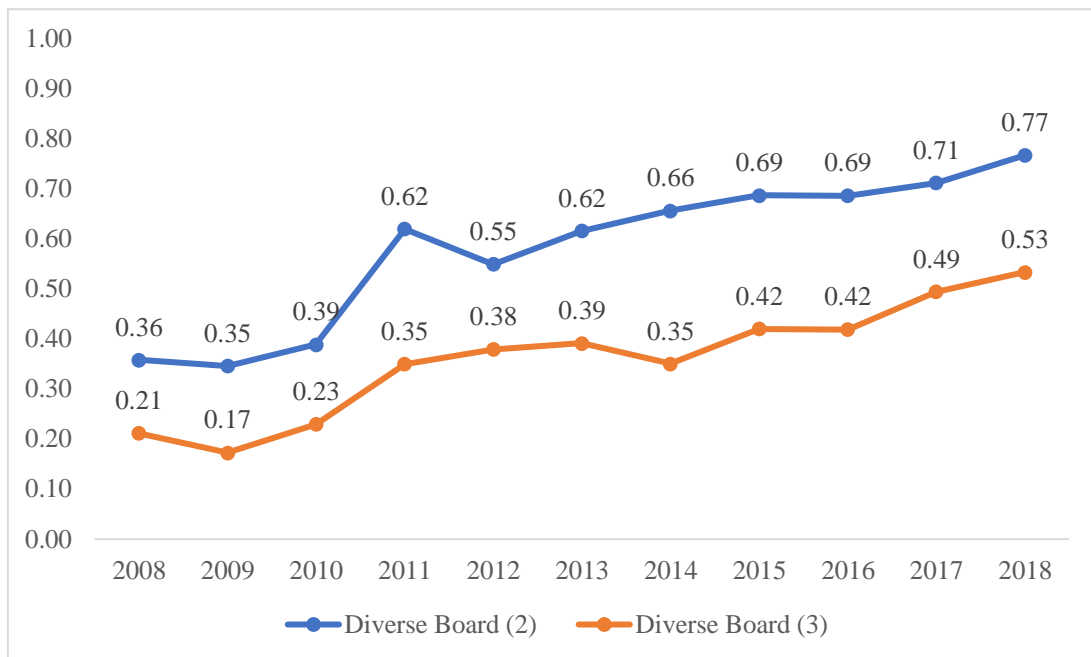
**Figure 1. Proportion of Diversity in the Board and Audit Committee**



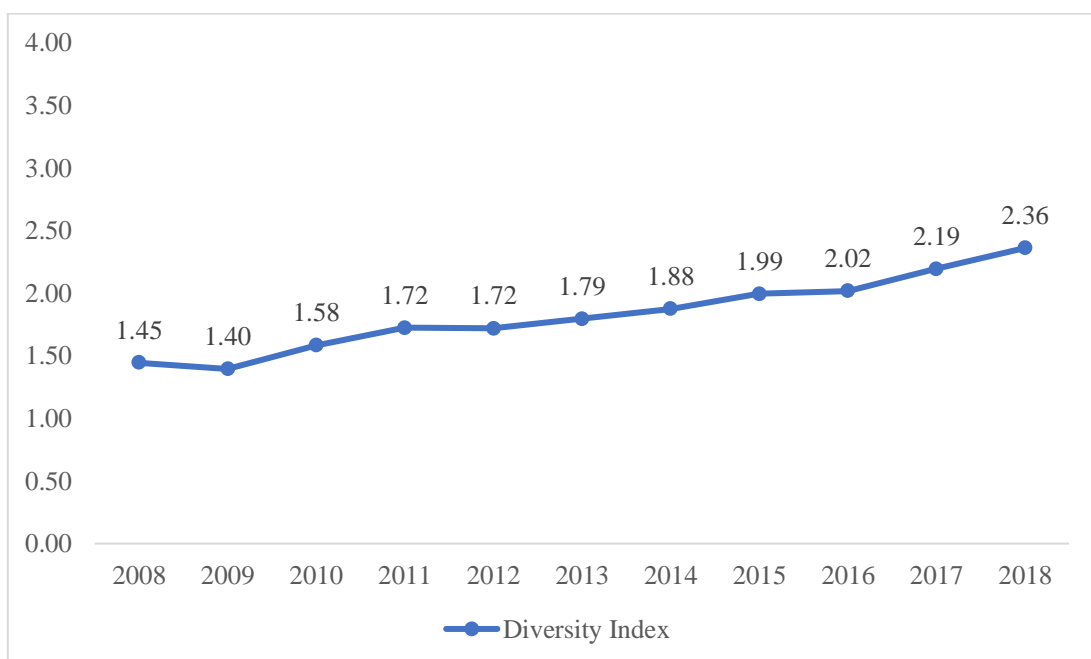
**Figure 2. Percentage of Diverse Board and Diverse Audit Committee**



**Figure 3. Proportion of Diversity in the Board that is more than 2 and 3**

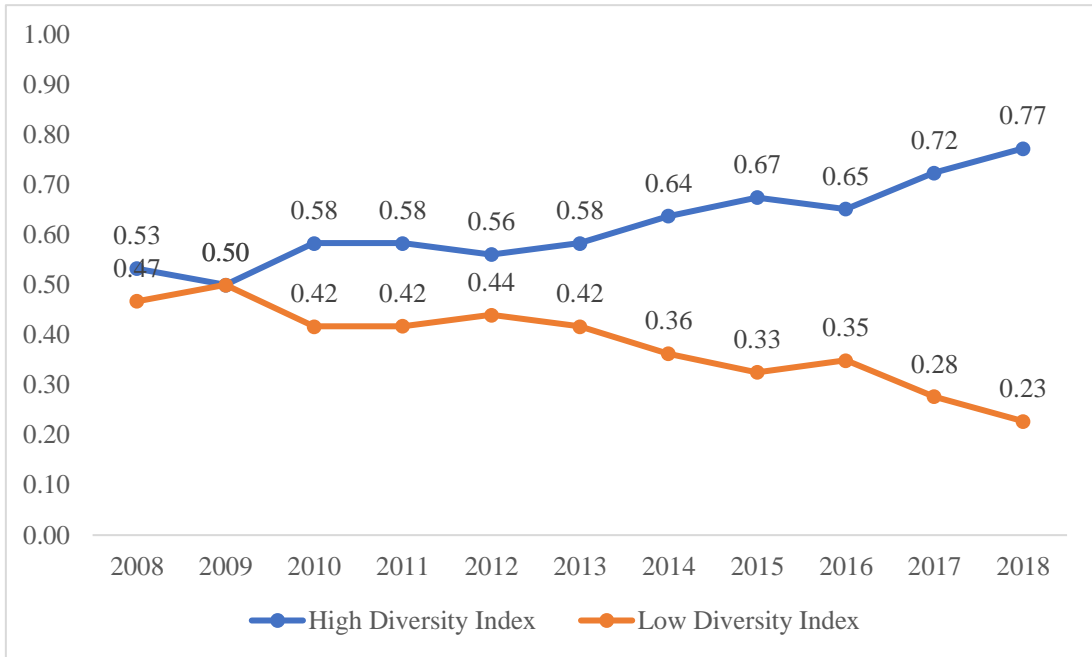


**Figure 4. Diversity Index from 2008 to 2018**

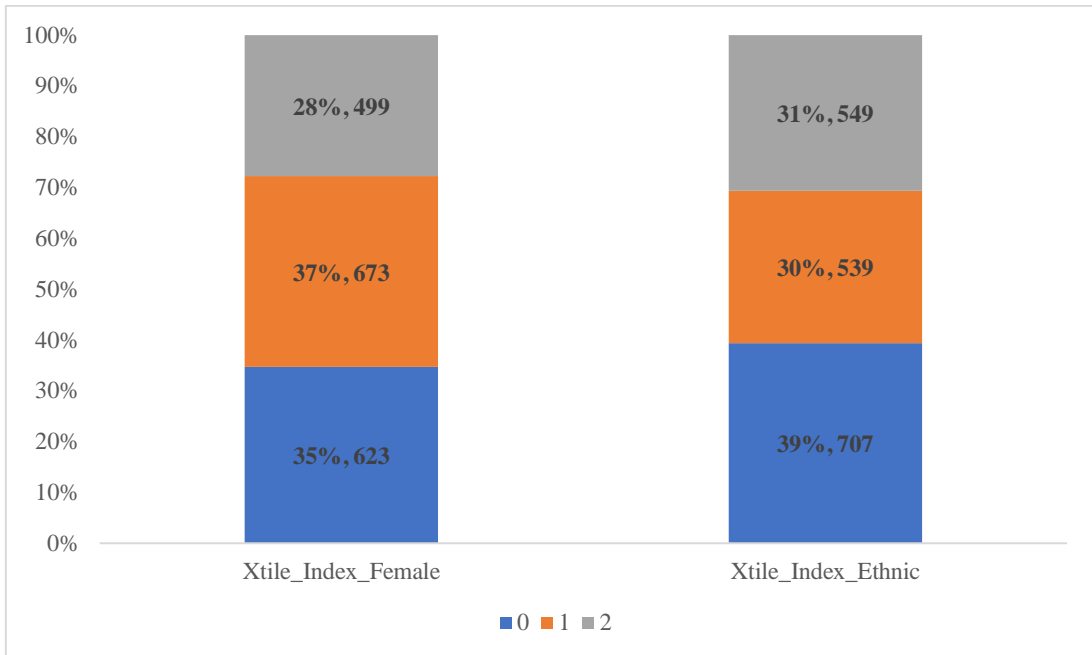




**Figure 5. High Diversity Index and Low Diversity Index from 2008 to 2018**



**Figure 6. Tercile Split Method Proportion**



**Table 8. Regression Result: Diverse Board on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Diverse Board	-0.005 (-1.45)	-0.002 (-0.58)	0.016* (1.85)	-0.008 (-0.61)	-0.007 (-0.03)
<b>Control Variable</b>					
Leverage	-0.030*** (-3.45)	0.000 (0.04)	-0.063*** (-2.86)	-0.021 (-0.76)	-0.806 (-1.08)
ROA	0.468*** (9.92)	-0.020 (-0.93)	-0.066 (-1.53)	-0.110 (-1.52)	0.439 (0.31)
Operating cash flow	-0.760*** (-19.49)	0.848*** (29.72)	-0.884*** (-15.38)	0.430*** (4.81)	-1.523 (-1.04)
Loss	-0.028*** (-4.25)	0.002 (0.33)	-0.041*** (-3.52)	0.074*** (4.20)	0.446 (1.43)
Litigation	-0.001 (-0.13)	0.017*** (4.51)	-0.036*** (-3.91)	0.028** (2.09)	-1.241*** (-4.63)
Sales growth	-0.027* (-1.75)	-0.039*** (-2.91)	0.056*** (2.96)	0.015 (0.52)	1.196** (2.40)
Market-to-book ratio	0.000 (0.41)	0.000 (0.30)	-0.001*** (-2.90)	0.001** (2.23)	0.012 (1.10)
Firm Size	-0.001 (-0.75)	0.007*** (6.63)	0.004 (1.62)	-0.013*** (-3.77)	0.119 (1.49)
Big 4 dummy	-0.000 (-0.08)	-0.002 (-0.31)	-0.020 (-1.59)	0.065*** (3.36)	0.077 (0.19)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.7%	61.9%	23.7%	12.6%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is diverse board, which is a dummy variable equal to 1 if the board has at least one female or non-Caucasian director, 0 otherwise. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 9. Regression Result: Percentage of Diverse Board on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Percentage of Diverse Board	0.000 (0.85)	-0.0003*** (-2.98)	0.000 (1.52)	0.0004* (1.76)	-0.007 (-1.01)
<b>Control Variable</b>					
Leverage	-0.031*** (-3.63)	0.002 (0.20)	-0.062*** (-2.82)	-0.025 (-0.90)	-0.722 (-0.98)
ROA	0.467*** (9.90)	-0.020 (-0.88)	-0.066 (-1.54)	-0.112 (-1.52)	0.427 (0.31)
Operating cash flow	-0.760*** (-19.46)	0.848*** (30.07)	-0.884*** (-15.49)	0.430*** (4.80)	-1.420 (-0.96)
Loss	-0.028*** (-4.22)	0.002 (0.29)	-0.042*** (-3.53)	0.074*** (4.25)	0.440 (1.42)
Litigation	-0.000 (-0.11)	0.018*** (4.74)	-0.037*** (-4.03)	0.028** (2.05)	-1.225*** (-4.60)
Sales growth	-0.027* (-1.72)	-0.039*** (-3.00)	0.055*** (2.96)	0.016 (0.55)	1.179** (2.39)
Market-to-book ratio	0.000 (0.41)	0.000 (0.23)	-0.001*** (-2.87)	0.001** (2.24)	0.012 (1.12)
Firm Size	-0.001 (-1.22)	0.007*** (7.28)	0.004* (1.67)	-0.014*** (-4.30)	0.137* (1.68)
Big 4 dummy	-0.002 (-0.35)	-0.001 (-0.11)	-0.019 (-1.49)	0.061*** (3.11)	0.103 (0.25)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.7%	62.2%	23.8%	12.8%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is percentage of diverse board, which is the percentage of female or non-Caucasian director in the board. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 10. Regression Result: Effect of Two Diverse Board on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Two Diverse Board	0.006** (2.00)	-0.009*** (-2.70)	-0.004 (-0.59)	0.012 (1.22)	-0.145 (-0.64)
<b>Control Variable</b>					
Leverage	-0.033*** (-3.82)	0.003 (0.29)	-0.059*** (-2.69)	-0.026 (-0.94)	-0.753 (-1.01)
ROA	0.466*** (9.91)	-0.019 (-0.88)	-0.064 (-1.50)	-0.113 (-1.53)	0.483 (0.34)
Operating cash flow	-0.760*** (-19.52)	0.848*** (29.83)	-0.884*** (-15.39)	0.430*** (4.81)	-1.513 (-1.03)
Loss	-0.027*** (-4.22)	0.002 (0.26)	-0.042*** (-3.58)	0.075*** (4.25)	0.439 (1.42)
Litigation	-0.000 (-0.05)	0.017*** (4.51)	-0.036*** (-3.94)	0.029** (2.12)	-1.237*** (-4.64)
Sales growth	-0.026 (-1.63)	-0.041*** (-3.06)	0.054*** (2.82)	0.019 (0.63)	1.154** (2.32)
Market-to-book ratio	0.000 (0.37)	0.000 (0.33)	-0.001*** (-2.88)	0.001** (2.22)	0.013 (1.13)
Firm Size	-0.002 (-1.61)	0.007*** (7.19)	0.005** (2.08)	-0.015*** (-4.25)	0.135* (1.66)
Big 4 dummy	-0.002 (-0.38)	-0.002 (-0.26)	-0.016 (-1.32)	0.063*** (3.18)	0.082 (0.20)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.8%	62.1%	23.7%	12.7%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is two diverse board, which is a dummy variable equal to 1 if the board has at least two female or non-Caucasian director, 0 otherwise. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 11. Regression Result: Effect of Three Diverse Board on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Three Diverse Board	0.004 (1.18)	-0.014*** (-3.90)	0.006 (0.79)	0.021** (2.06)	-0.505** (-2.11)
<b>Control Variable</b>					
Leverage	-0.031*** (-3.63)	0.002 (0.23)	-0.061*** (-2.77)	-0.025 (-0.90)	-0.673 (-0.91)
ROA	0.466*** (9.88)	-0.017 (-0.80)	-0.066 (-1.55)	-0.116 (-1.57)	0.562 (0.40)
Operating cash flow	-0.760*** (-19.47)	0.846*** (29.96)	-0.884*** (-15.41)	0.432*** (4.82)	-1.583 (-1.08)
Loss	-0.028*** (-4.24)	0.002 (0.31)	-0.042*** (-3.56)	0.074*** (4.23)	0.439 (1.41)
Litigation	-0.000 (-0.12)	0.018*** (4.78)	-0.036*** (-3.97)	0.028** (2.03)	-1.219*** (-4.53)
Sales growth	-0.026* (-1.68)	-0.042*** (-3.15)	0.056*** (2.99)	0.020 (0.68)	1.097** (2.19)
Market-to-book ratio	0.000 (0.44)	0.000 (0.14)	-0.001*** (-2.85)	0.001** (2.31)	0.013 (1.10)
Firm Size	-0.002 (-1.38)	0.008*** (7.88)	0.004* (1.65)	-0.016*** (-4.58)	0.181** (2.29)
Big 4 dummy	-0.002 (-0.36)	-0.001 (-0.08)	-0.018 (-1.40)	0.061*** (3.08)	0.125 (0.31)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.4%	62.3%	23.7%	12.8%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is three diverse board, which is a dummy variable equal to 1 if the board has at least three female or non-Caucasian director, 0 otherwise. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 12. Regression Result: Effect Diversity in the Board through Diversity Index on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Diversity Index	0.001 (1.13)	-0.005*** (-3.18)	0.006* (1.86)	0.006 (1.46)	-0.142 (-1.60)
<b>Control Variable</b>					
Leverage	-0.031*** (-3.65)	0.002 (0.22)	-0.062*** (-2.84)	-0.025 (-0.90)	-0.707 (-0.95)
ROA	0.467*** (9.89)	-0.018 (-0.83)	-0.068 (-1.59)	-0.114 (-1.54)	0.501 (0.35)
Operating cash flow	-0.760*** (-19.52)	0.849*** (29.88)	-0.885*** (-15.48)	0.428*** (4.79)	-1.445 (-0.99)
Loss	-0.028*** (-4.23)	0.002 (0.28)	-0.041*** (-3.51)	0.074*** (4.24)	0.431 (1.39)
Litigation	-0.000 (-0.06)	0.017*** (4.49)	-0.036*** (-3.92)	0.029** (2.15)	-1.242*** (-4.63)
Sales growth	-0.027* (-1.69)	-0.041*** (-3.06)	0.057*** (3.02)	0.018 (0.62)	1.125** (2.30)
Market-to-book ratio	0.000 (0.43)	0.000 (0.20)	-0.001*** (-2.82)	0.001** (2.27)	0.013 (1.10)
Firm Size	-0.001 (-1.32)	0.008*** (7.44)	0.003 (1.31)	-0.015*** (-4.39)	0.160* (1.93)
Big 4 dummy	-0.002 (-0.39)	-0.000 (-0.05)	-0.019 (-1.55)	0.061*** (3.10)	0.110 (0.27)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.7%	62.2%	23.8%	12.7%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is diversity index, which is the summed of the tercile split method that has been score for both gender and ethnic diversity. Ranging from 0 to 4, explaining low diversity to high diversity. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 13. Regression Result: Effect Diversity in the Board through High Diversity Index on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
High Diversity Index	0.006* (1.93)	-0.007** (-2.21)	0.013* (1.87)	0.001 (0.16)	-0.325 (-1.51)
<b>Control Variable</b>					
Leverage	-0.032*** (-3.78)	0.002 (0.21)	-0.064*** (-2.90)	-0.023 (-0.82)	-0.686 (-0.92)
ROA	0.467*** (9.95)	-0.020 (-0.90)	-0.066 (-1.55)	-0.111 (-1.52)	0.509 (0.36)
Operating cash flow	-0.762*** (-19.62)	0.850*** (29.79)	-0.888*** (-15.43)	0.429*** (4.81)	-1.431 (-0.97)
Loss	-0.027*** (-4.23)	0.002 (0.30)	-0.041*** (-3.52)	0.074*** (4.21)	0.434 (1.40)
Litigation	-0.000 (-0.00)	0.017*** (4.43)	-0.035*** (-3.87)	0.029** (2.11)	-1.251*** (-4.63)
Sales growth	-0.026* (-1.68)	-0.040*** (-2.98)	0.057*** (3.01)	0.016 (0.54)	1.138** (2.31)
Market-to-book ratio	0.000 (0.44)	0.000 (0.25)	-0.001*** (-2.84)	0.001** (2.22)	0.012 (1.10)
Firm Size	-0.002 (-1.47)	0.007*** (7.03)	0.004 (1.54)	-0.013*** (-3.99)	0.151* (1.87)
Big 4 dummy	-0.002 (-0.39)	-0.002 (-0.27)	-0.018 (-1.45)	0.064*** (3.23)	0.093 (0.23)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.8%	62.0%	23.8%	12.6%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is high diversity index, which is a dummy variable equal to 1, if the score of *DIVERSE\_INDEX* lies above the median level of *DIVERSE\_INDEX*, otherwise 0. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 14. Regression Result: Effect Diversity in the Board through Low Diversity Index on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Low Diversity Index	-0.006* (-1.93)	0.007** (2.21)	-0.013* (-1.87)	-0.001 (-0.16)	0.325 (1.51)
<b>Control Variable</b>					
Leverage	-0.032*** (-3.78)	0.002 (0.21)	-0.064*** (-2.90)	-0.023 (-0.82)	-0.686 (-0.92)
ROA	0.467*** (9.95)	-0.020 (-0.90)	-0.066 (-1.55)	-0.111 (-1.52)	0.509 (0.36)
Operating cash flow	-0.762*** (-19.62)	0.850*** (29.79)	-0.888*** (-15.43)	0.429*** (4.81)	-1.431 (-0.97)
Loss	-0.027*** (-4.23)	0.002 (0.30)	-0.041*** (-3.52)	0.074*** (4.21)	0.434 (1.40)
Litigation	-0.000 (-0.00)	0.017*** (4.43)	-0.035*** (-3.87)	0.029** (2.11)	-1.251*** (-4.63)
Sales growth	-0.026* (-1.68)	-0.040*** (-2.98)	0.057*** (3.01)	0.016 (0.54)	1.138** (2.31)
Market-to-book ratio	0.000 (0.44)	0.000 (0.25)	-0.001*** (-2.84)	0.001** (2.22)	0.012 (1.10)
Firm Size	-0.002 (-1.47)	0.007*** (7.03)	0.004 (1.54)	-0.013*** (-3.99)	0.151* (1.87)
Big 4 dummy	-0.002 (-0.39)	-0.002 (-0.27)	-0.018 (-1.45)	0.064*** (3.23)	0.093 (0.23)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.8%	62.0%	23.8%	12.6%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is low diversity index, which is a dummy variable equal to 1, if the score of *DIVERSE\_INDEX* lies below the median level of *DIVERSE\_INDEX*, otherwise 0. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.



**Table 15. Regression Result: Effect Diverse Chair Audit Committee on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Diverse Audit	0.003 (1.11)	-0.003 (-0.76)	0.017** (2.13)	-0.023** (-2.45)	-0.058 (-0.23)
<b>Control Variable</b>					
Leverage	-0.031*** (-3.56)	-0.000 (-0.00)	-0.060*** (-2.76)	-0.022 (-0.80)	-0.805 (-1.08)
ROA	0.467*** (9.91)	-0.020 (-0.94)	-0.065 (-1.52)	-0.111 (-1.53)	0.445 (0.32)
Operating cash flow	-0.760*** (-19.48)	0.848*** (29.74)	-0.885*** (-15.44)	0.430*** (4.82)	-1.518 (-1.04)
Loss	-0.027*** (-4.20)	0.002 (0.29)	-0.040*** (-3.41)	0.072*** (4.08)	0.441 (1.41)
Litigation	-0.000 (-0.10)	0.017*** (4.57)	-0.037*** (-4.03)	0.029** (2.16)	-1.239*** (-4.59)
Sales growth	-0.027* (-1.73)	-0.039*** (-2.92)	0.056*** (2.96)	0.015 (0.50)	1.194** (2.38)
Market-to-book ratio	0.000 (0.35)	0.000 (0.33)	-0.001*** (-2.99)	0.001** (2.32)	0.012 (1.11)
Firm Size	-0.001 (-1.14)	0.007*** (6.64)	0.004* (1.74)	-0.013*** (-3.65)	0.120 (1.57)
Big 4 dummy	-0.001 (-0.26)	-0.002 (-0.39)	-0.016 (-1.31)	0.063*** (3.20)	0.074 (0.18)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.4%	61.9%	23.8%	12.8%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is diverse audit, which is a dummy variable equal to 1 if the chair of the audit is female or non-Caucasian director, 0 otherwise. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 16. Regression Result: Percentage of Diverse Chair Audit Committee on Earnings Management**

Variable	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
<b>Independent Variable</b>					
Percentage of Diverse Audit	0.000 (0.53)	-0.000 (-1.19)	0.001** (2.25)	-0.001** (-2.06)	-0.008 (-0.96)
<b>Control Variable</b>					
Leverage	-0.031*** (-3.56)	-0.000 (-0.01)	-0.060*** (-2.76)	-0.022 (-0.81)	-0.801 (-1.08)
ROA	0.467*** (9.90)	-0.020 (-0.93)	-0.065 (-1.53)	-0.110 (-1.52)	0.465 (0.33)
Operating cash flow	-0.760*** (-19.47)	0.848*** (29.82)	-0.884*** (-15.46)	0.429*** (4.81)	-1.504 (-1.03)
Loss	-0.028*** (-4.22)	0.002 (0.26)	-0.040*** (-3.42)	0.072*** (4.11)	0.430 (1.37)
Litigation	-0.000 (-0.10)	0.017*** (4.65)	-0.037*** (-4.09)	0.029** (2.19)	-1.226*** (-4.55)
Sales growth	-0.027* (-1.74)	-0.039*** (-2.91)	0.055*** (2.93)	0.016 (0.53)	1.192** (2.37)
Market-to-book ratio	0.000 (0.38)	0.000 (0.34)	-0.001*** (-2.97)	0.001** (2.28)	0.012 (1.13)
Firm Size	-0.001 (-1.08)	0.007*** (6.68)	0.005* (1.80)	-0.013*** (-3.75)	0.123 (1.61)
Big 4 dummy	-0.001 (-0.26)	-0.003 (-0.42)	-0.016 (-1.27)	0.063*** (3.18)	0.063 (0.16)
<b>Information</b>					
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R2	49.6%	62.0%	23.8%	12.8%	-
Sample size	1,795	1,795	1,795	1,795	1,789

This table shows fixed effects regressions of board diversity on corporate earnings management with the independent variable is percentage of diverse audit, which is the percentage of female or non-Caucasian chair audit committee. Regression column (1) use discretionary accruals as the dependent variable, regression column (2) use abnormal cash flows from operations as the dependent variable, regression column (3) use abnormal production costs as the dependent variable, regression column (4) use abnormal discretionary expenses as the dependent variable, and lastly column (5) use logit regression and restatement as the dependent variable. For the asterisk, \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

**Table 17. Regression Result Summary**

	<b>Discretionary Accruals (1)</b>	<b>Abnormal Cash Flows from Operations (2)</b>	<b>Abnormal Production Costs (3)</b>	<b>Abnormal Discretionary Expenses (4)</b>	<b>Probability of Restatement (5)</b>
<b>Expected Sign</b>	<b>(Negative)</b>	<b>(Positive)</b>	<b>(Negative)</b>	<b>(Positive)</b>	<b>(Negative)</b>
<b>Diverse Board (1)</b>	Insignificant	Insignificant	Positive*	Insignificant	Insignificant
<b>Percentage of Diverse Board</b>	Insignificant	Negative***	Insignificant	Positive*	Insignificant
<b>Diverse Board (2)</b>	Positive**	Negative***	Insignificant	Insignificant	Insignificant
<b>Diverse Board (3)</b>	Insignificant	Negative***	Insignificant	Positive**	Negative**
<b>Diversity Index</b>	Insignificant	Negative***	Positive*	Insignificant	Insignificant
<b>High Diverse Index</b>	Positive*	Negative**	Positive*	Insignificant	Insignificant
<b>Low Diverse Index</b>	Negative*	Positive**	Negative*	Insignificant	Insignificant
<b>Diverse Audit (1)</b>	Insignificant	Insignificant	Positive**	Negative**	Insignificant
<b>Percentage of Diverse Audit</b>	Insignificant	Insignificant	Positive**	Negative**	Insignificant

\*\*\* 1% level, \*\* 5% level, \* 10% level

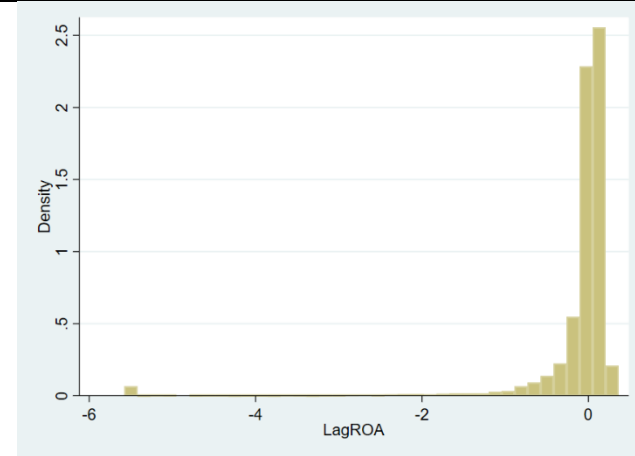
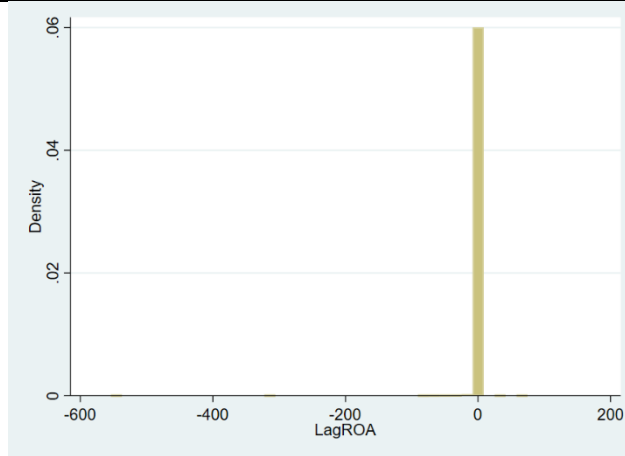
**Table 18. Multicollinearity Test (VIF Test)**

	<b>Discretionary Accruals (1)</b>	<b>Abnormal Cash Flows from Operations (2)</b>	<b>Abnormal Production Costs (3)</b>	<b>Abnormal Discretionary Expenses (4)</b>
<b>Diverse Board (1)</b>	1.34	1.34	1.34	1.34
<b>Percentage of Diverse Board</b>	1.34	1.34	1.34	1.34
<b>Diverse Board (2)</b>	1.37	1.37	1.37	1.37
<b>Diverse Board (3)</b>	1.39	1.39	1.39	1.39
<b>Diversity Index</b>	1.37	1.37	1.37	1.37
<b>High Diverse Index</b>	1.35	1.35	1.35	1.35
<b>Low Diverse Index</b>	1.35	1.35	1.35	1.35
<b>Diverse Audit (1)</b>	1.33	1.33	1.33	1.33
<b>Percentage of Diverse Audit</b>	1.32	1.32	1.32	1.32

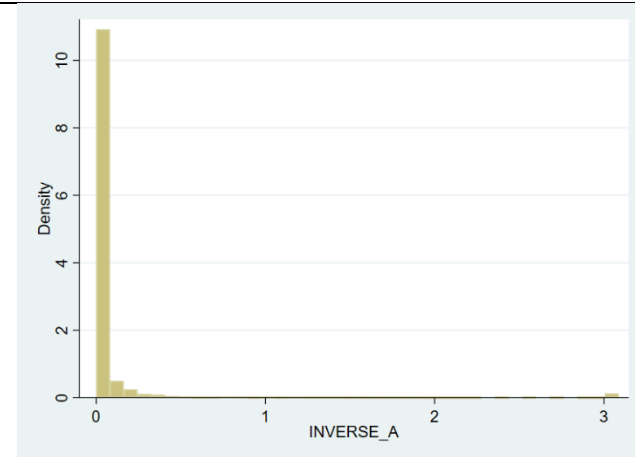
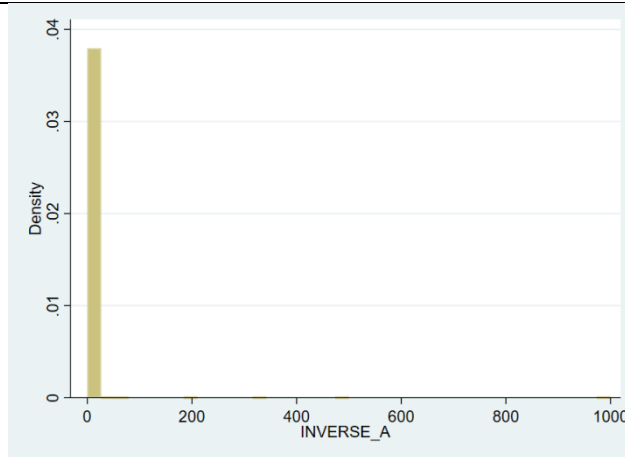
**Table 20. Variables Before and After Winsorize**

	Before	After
TACC		
DREV		

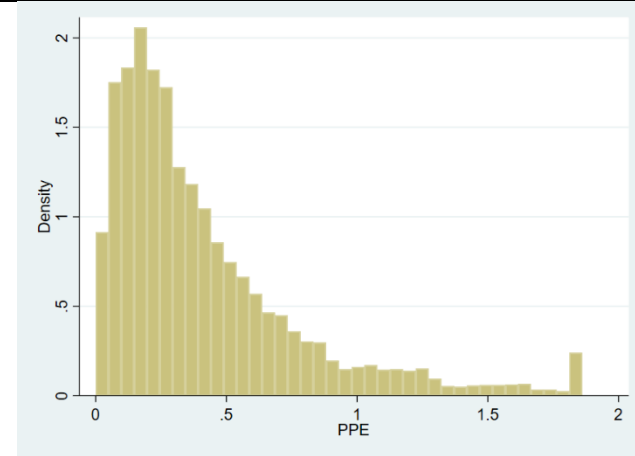
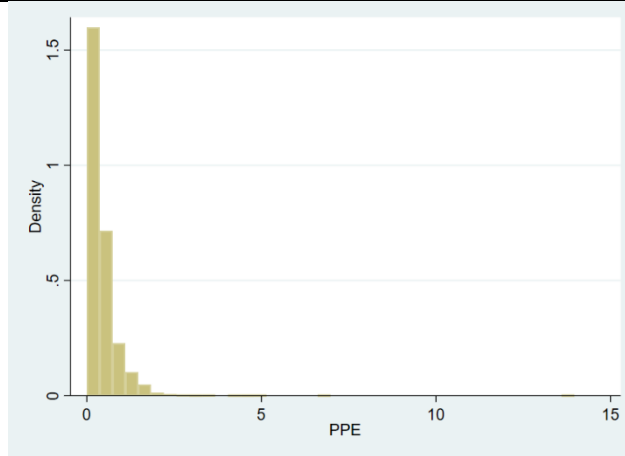
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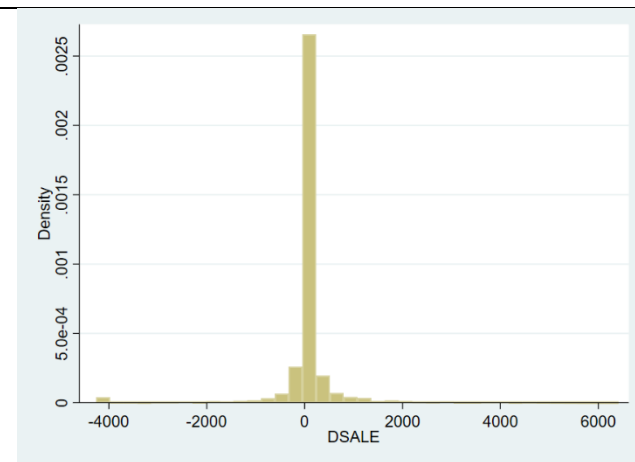
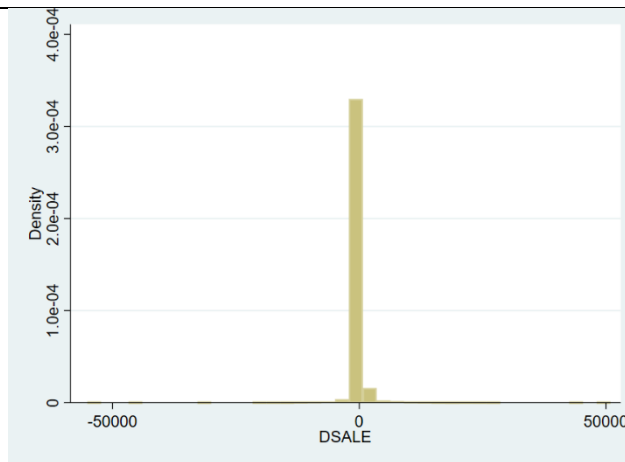
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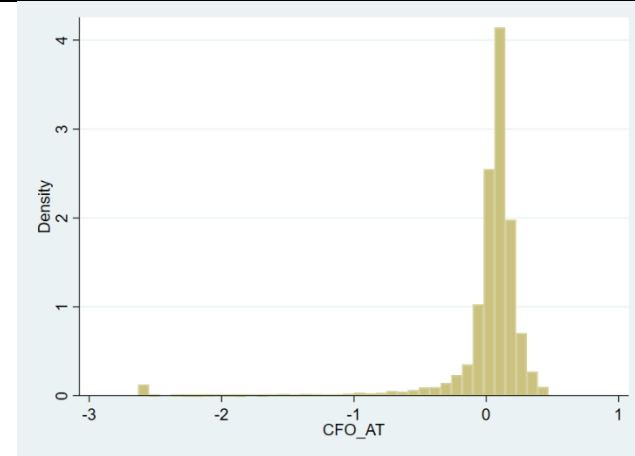
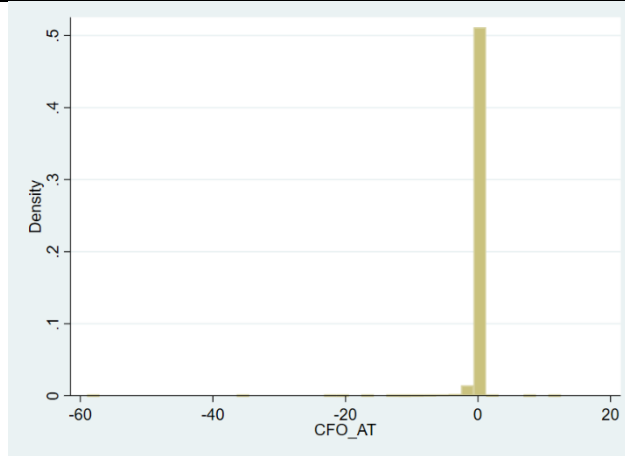
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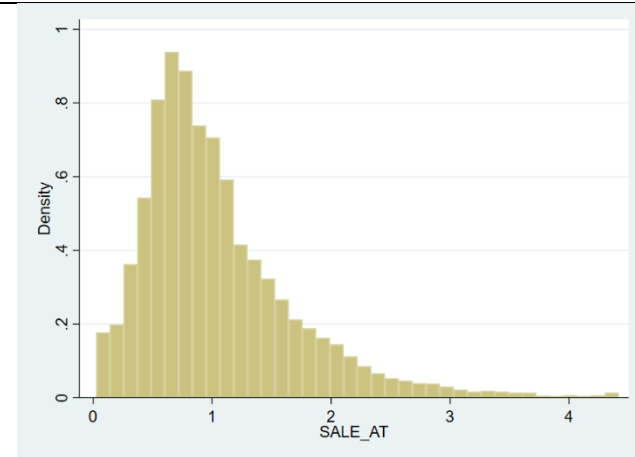
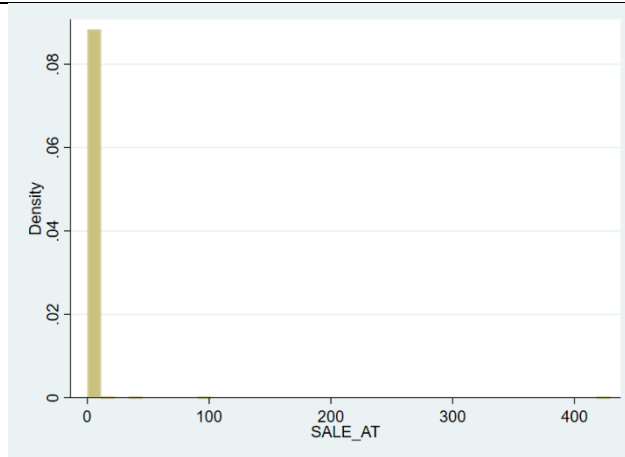
**DSALE**



**CFO\_AT**

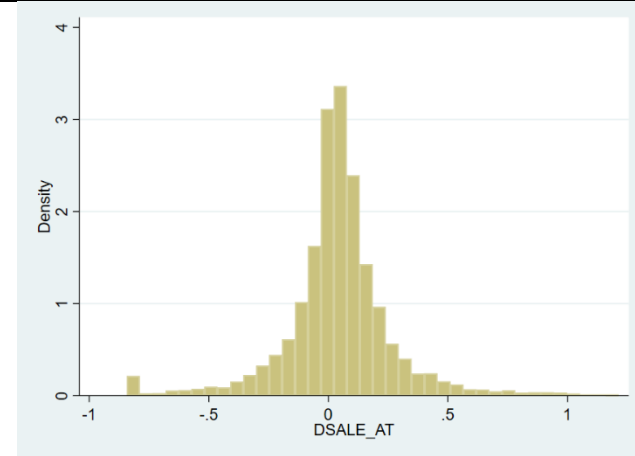
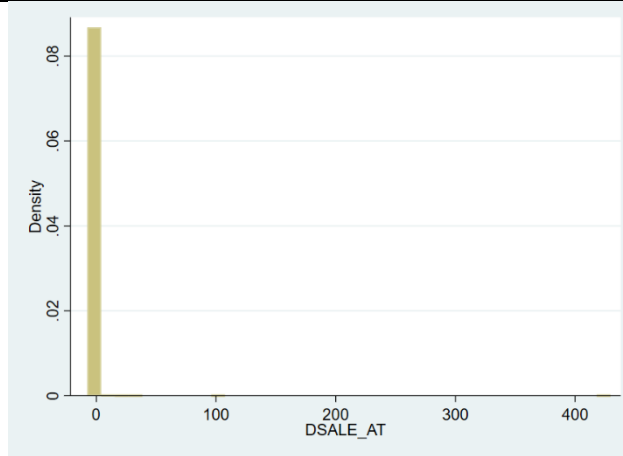


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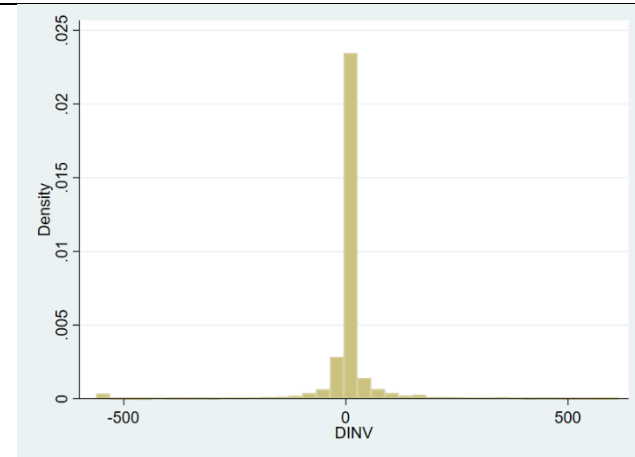
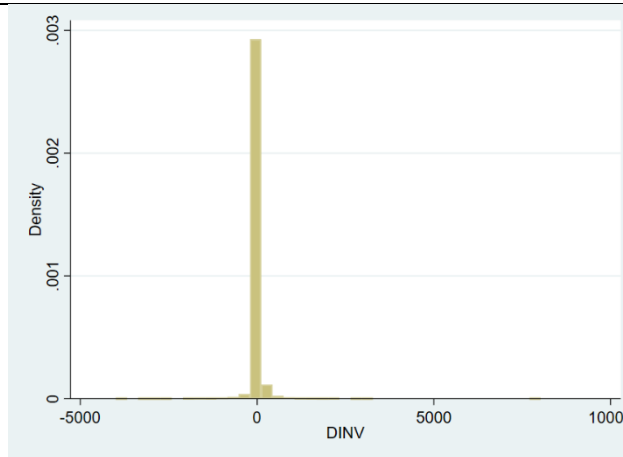




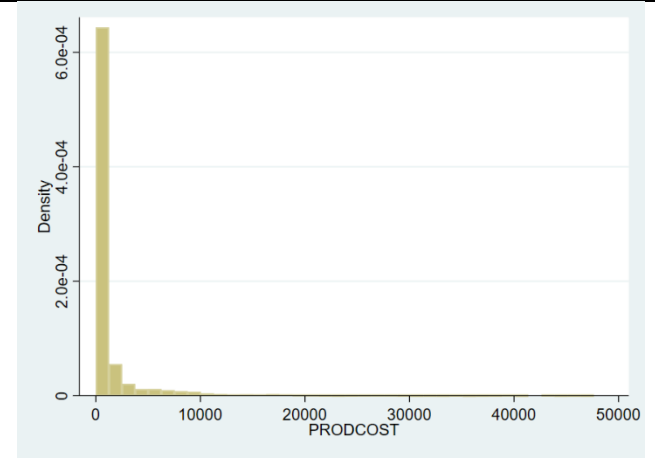
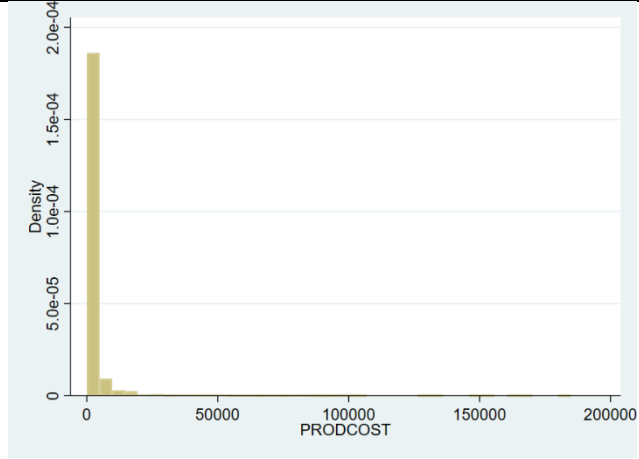
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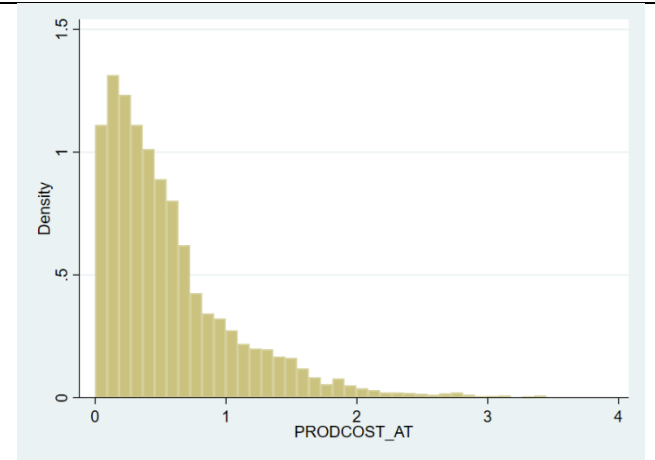
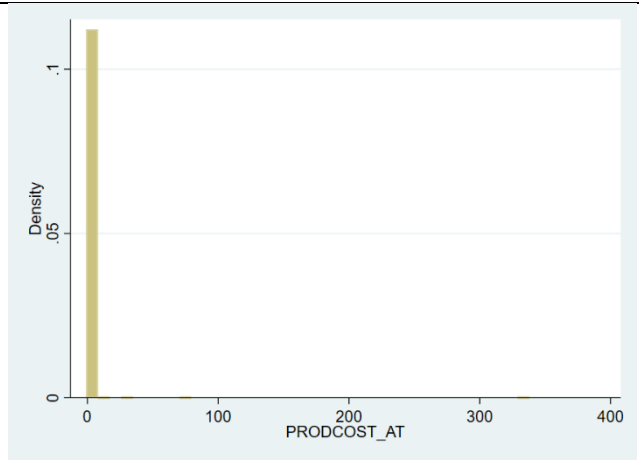
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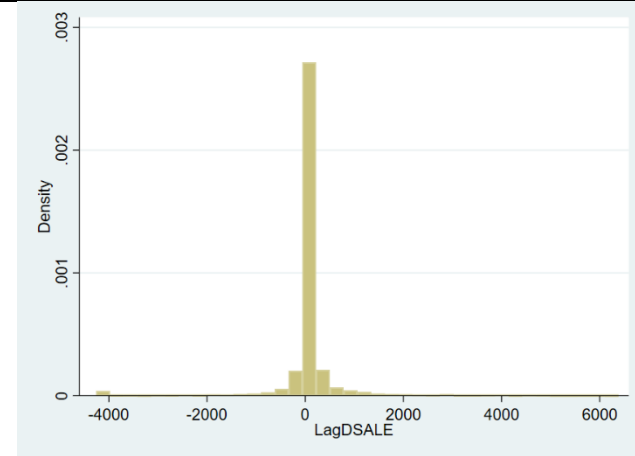
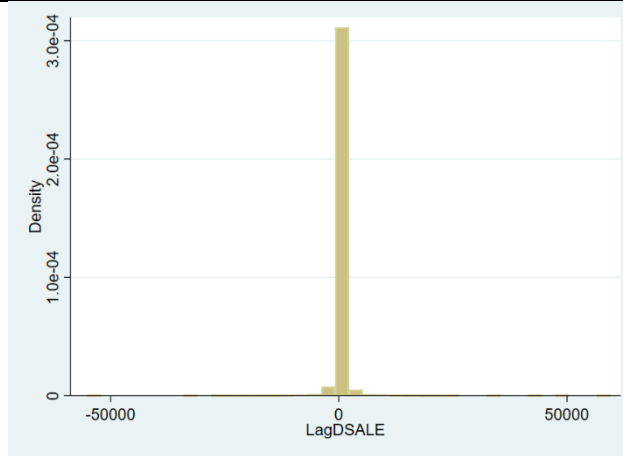
**PRODCOST**



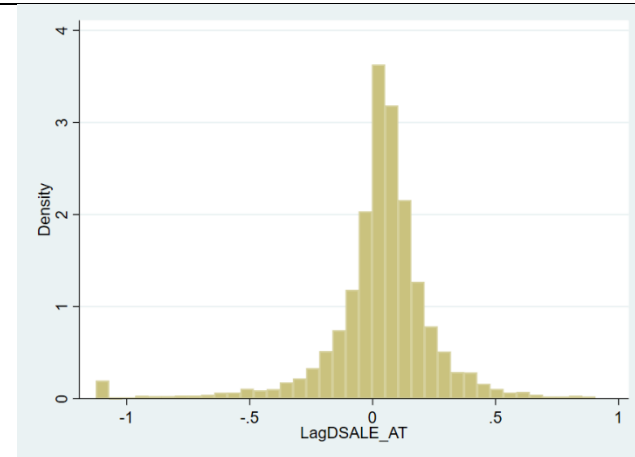
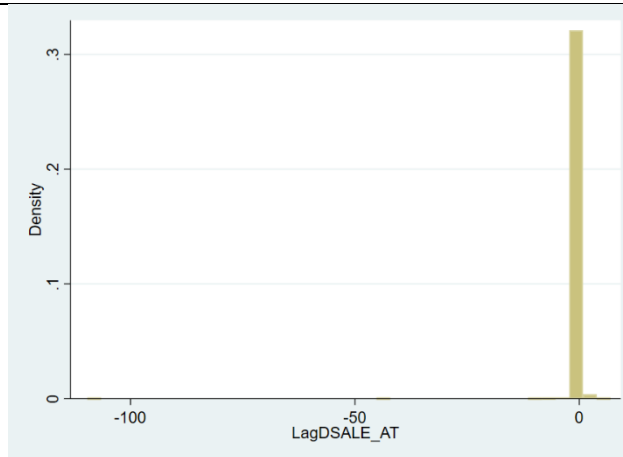
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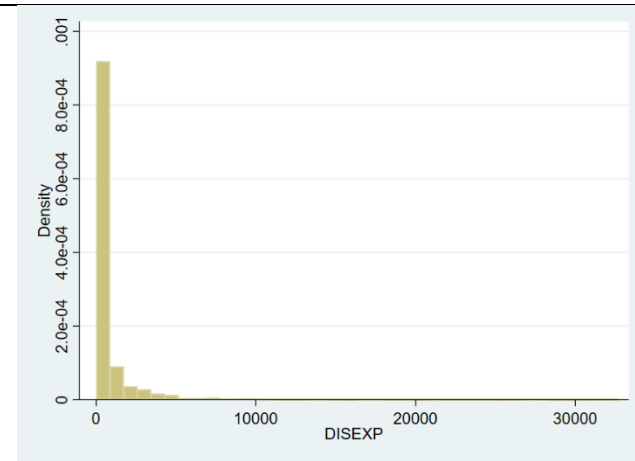
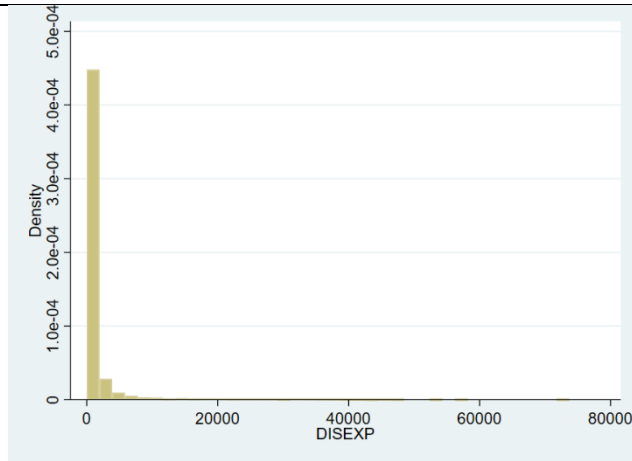
**LagDSALE**



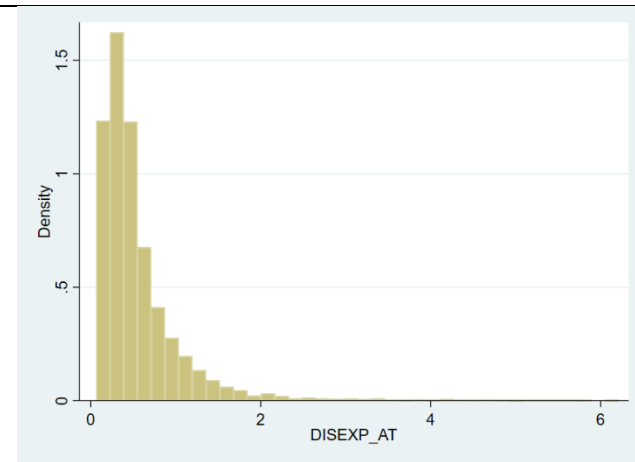
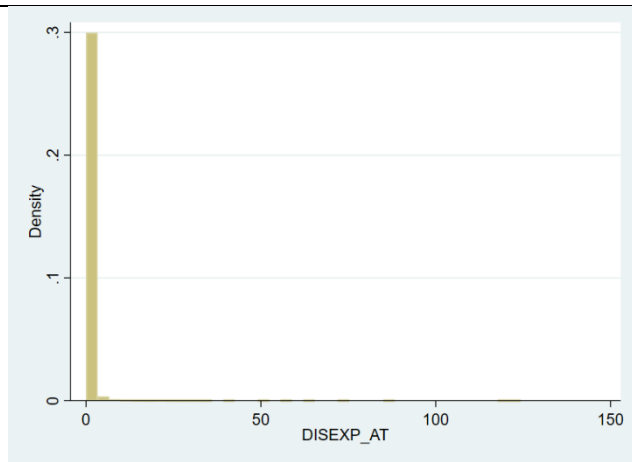
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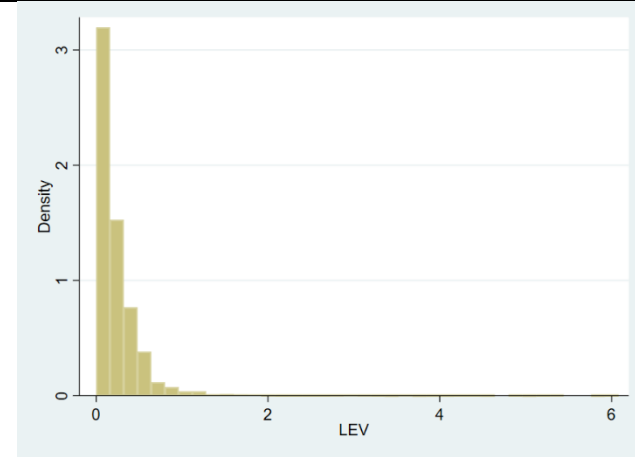
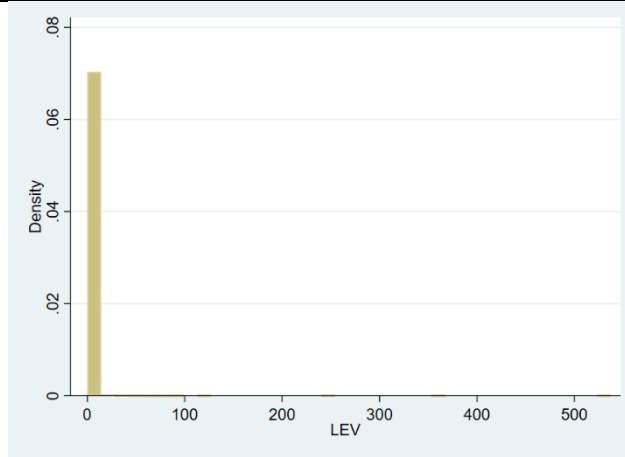
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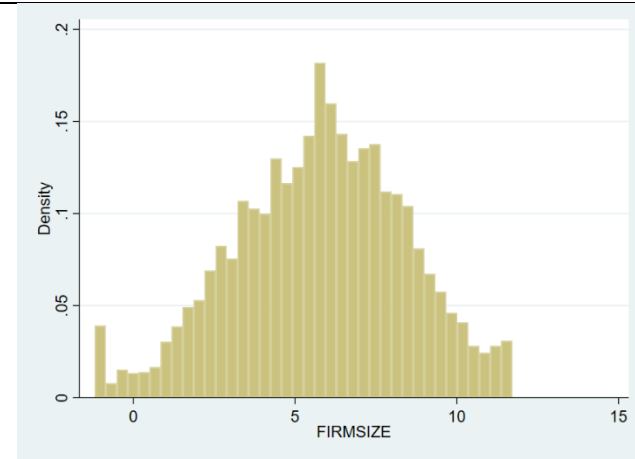
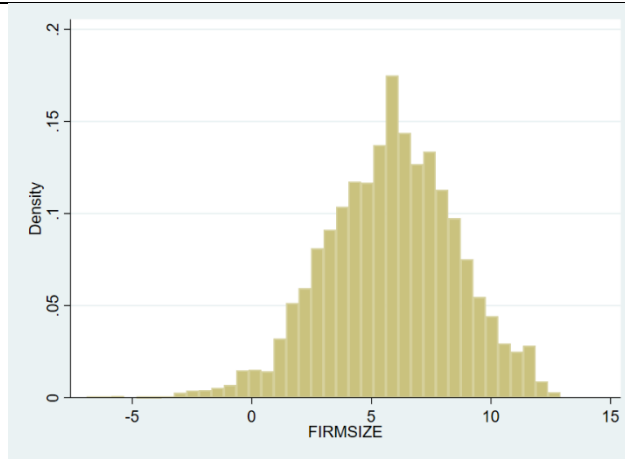
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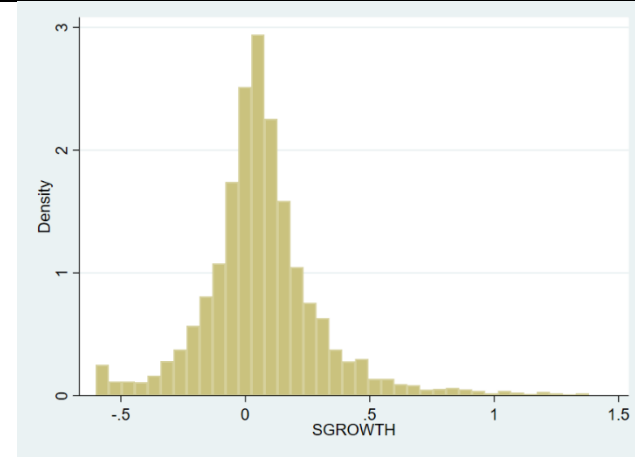
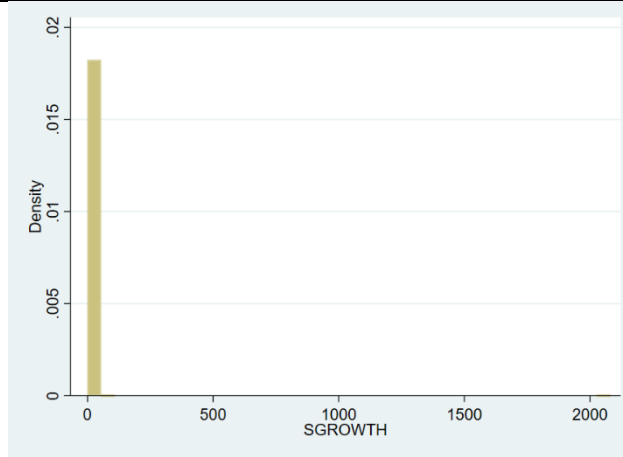
**LEV**



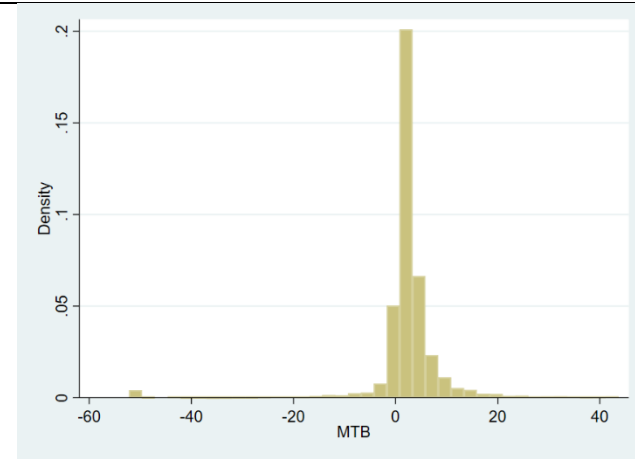
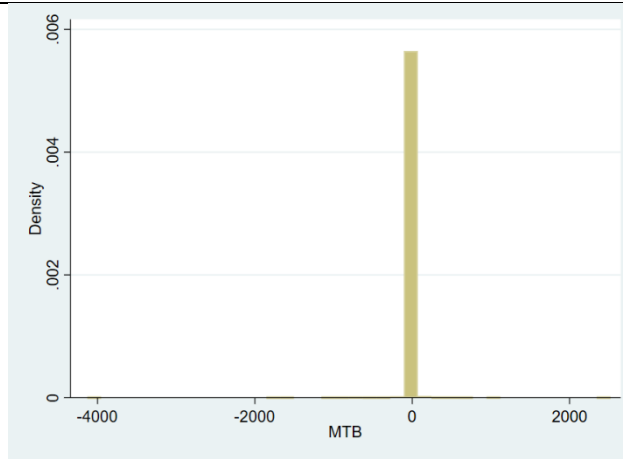
**FIRMSIZE**



**SGROWTH**



**MTB**



**OCF**

