THREE ESSAYS ON BANK ACCOUNTING AND GOVERNANCE

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Declaration

This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy. It has been composed by myself and has not been submitted in any previous application for any degree.

Please note that *Chapter two* is published in the *European Journal of Finance.*

Abstract

This thesis consists of three essays. They examine how different demographic attributes of bank executives and directors affect financial reporting. The first essay investigates whether the Chief Financial Officer (CFO)'s gender affects the timeliness of Loan Loss Provision (LLP). The second and third essays focus on the demographic diversity of the board and its effect on LLP reporting in banks.

In the first essay, I find that banks with women as CFOs report timelier LLP than banks with men as CFOs. The results are robust to a number of robustness tests. Specifically, I document an improvement in the timeliness of LLP following the replacement of a man with a woman as CFO.

The second essay investigates the effect of the ethnic diversity of the board on LLP reporting. The findings suggest that boards with ethnic minorities are more likely to report timelier LLP. The effect becomes more prominent for banks with high risks. I control for endogeneity by using bank fixed effects and propensity score matching.

Finally, the third essay examines the effect of age diversity among the board of directors on earnings management. I find that age diversity results in a stronger monitoring of executives and reduces earnings management in banks. The results are robust to the use of bank fixed effects and propensity score matching. In a further analysis, the findings reveal that age diversity reduces bank risk by improving loan quality.

Overall, the thesis contributes to the scarce literature on the effect of bank governance on financial reporting quality in banks. It shows that the demographic attributes of executives and directors significantly affect their decision-making process. The results suggest that diversity improves financial reporting quality in banks and support the recent calls for increasing board diversity.

Chapter 1: Introduction

Between May 2007 and March 2009, US and European banks lost almost 82% of their market capitalisation (Altunbas et al., 2011). This collapse was mainly attributed to the failure of the function of corporate governance in banks (John et al., 2016). Monitoring financial reporting quality is one of the central duties of corporate governance. However, during the period that preceded the financial crisis of 2007-09, banks engaged in excessive risk taking, while failing to report these risk issues on their financial reports (Barth and Landsman, 2010). Although the effect of corporate governance on financial reporting decisions has received substantial research attention (Clinch and Magliolo, 1993, Beasley, 1996, Klein, 2002, Park and Shin, 2004, Ali and Zhang, 2015), much less is known about corporate governance's impact on financial reporting quality in banks.

In this thesis, I focus on how corporate governance affects decision-making in banks; this is particularly important for several reasons. First, the intensity of the agency problem in the banking industry is higher than in other sectors (Laeven, 2013). Given that banks are highly leveraged by nature, the conflict between shareholders and debtholders is more pronounced (John et al., 2016). Banks' shareholders reap all the benefits from the return of a risky investment, while avoiding legal penalties when banks go bankrupt (Beatty and Liao, 2014). In addition, regulators typically insure bank deposits against bank runs (Anginer and Demirguc-Kunt, 2018), which discourages debtholders from their monitoring duties. Therefore, internal governance mechanisms in banks have an even more important role in impeding managerial opportunism, compared to companies operating in other industries. Consistently, many corporate governance studies focus solely on the banking industry in their sample, which further highlights the uniqueness and importance of this industry (Pathan, 2009, Cornett et al., 2009, Livne et al., 2011, Adams and Mehran, 2012, Aebi et al., 2012, Ellul and Yerramilli, 2013, Bushman et al., 2018, Fan et al., 2019).

Second, by facilitating lending, banks are at the centre of the modern economic system. This explains why governments decided to bail banks out during the financial crisis of 2007-09, preventing them from failing. During the 2007-09 financial crisis, banks received the most generous subsidy bailouts from governments, with the US government for example paying almost $700 billion (Congressional Budget Office, 2012). Third, banks' financial reports are complex and opaque, with loan loss provision (LLP) being the most controversial reporting issue in bank reporting (Acharya and Ryan, 2016, John et al., 2016). Given that lending is the main activity of commercial banks, LLP reporting is a very important indicator of bank risk. However, it is very challenging for external stakeholders to assess the riskiness of banks'

loan portfolios without transparent reporting (Beatty and Liao, 2014). Transparent LLP reporting allows external stakeholders to monitor and discipline bank risk taking (Bushman and Williams, 2012). If banks do not report loan losses transparently, external stakeholders will fail to assess bank risks, therefore failing to discipline banks over excessive risk taking. In addition, timelier LLP enables banks to identify bad loans in a timely manner and take corrective action, which eventually results in a decrease in loan risks (Akins et al., 2017). Consistent with the fact that LLP misreporting increases bank risks, Cohen et al. (2014) find that banks that managed earnings were more likely to have increased tail risk during the financial crisis of 2007-09. Similarly, Jin et al. (2018) show that banks that failed during the recent financial crisis of 2007-09 misreported LLP in earlier periods. In addition, Bushman and Williams (2015) report that banks that delay LLP reporting tend to have stock market liquidity risk, and downside tail risk. Throughout this thesis, I implement two measures to assess the quality of reported LLP: timeliness and earnings management. LLP is considered timelier when bad loans are reported before they become non-performing, while earnings management is the intentional adjustment of earnings to achieve goals other than the financial performance of the bank. Unlike studies that investigate reporting quality in the nonbanking sector, bank accounting studies use bank-specific models to estimate financial reporting quality. Using an industry-specific model also alleviates concerns related to model misspecification issues associated with cross-industry accrual models.

1.1 Literature review

This thesis focuses on the effect of the demographic attributes of banks' executives and directors on financial reporting in banks. The psychology literature shows that demographic characteristics of individuals, such as gender and age, substantially influence their decisions (Born et al., 1987, Eagly et al., 1995). Thus, regulators currently advise firms to increase diversity at the executive and board levels. For example, both the Australian Securities Exchange and the Securities and Exchange Commission in the United States require public firms to disclose their diversity policy (Securities and Exchange Commission, 2009, Australian Securities Exchange, 2010). In the banking context, some diversity measures are believed to improve monitoring and reduce excessive risk taking. For instance, Christine Lagarde, President of the European Central Bank (ECB), once asked: "what would have happened if Lehman Brothers had been Lehman Sisters". Besides, the Basel Committee on Banking Supervision encourages board diversity to better handle the complex nature of the banking industry (Basel Committee on Banking Supervision, 2015). However, there is no consensus among academics on whether the findings in the psychological studies are relevant

to a corporate setting. The findings in the accounting and finance literature are mixed, warranting further investigation.

Different theories attempt to predict the effect of board diversity on firms. Resource dependence theory (Hillman et al., 2007) and agency theory (Carter et al., 2003) suggest that an increase in diversity leads to a positive effect on firms' decisions. Resource dependence theory postulates that individuals with different demographic characteristics have different sets of experience, and thus board diversity improves overall board expertise (Berger et al., 2014, Guest, 2019). Consistent with this prediction, Watson et al. (1993) find that, in the long run, heterogeneous groups outperform homogeneous groups. Miller and del Carmen Triana (2009) find that ethnically diverse boards are more innovative. Agency theory indicates that heterogeneous boards are more likely to be independent than homogeneous boards (Fan et al., 2019, Sila et al., 2016). For example, directors with different demographic attributes are less likely to form social ties with each other, and hence are expected to be more independent (Guest, 2019). Thus, they are more likely to scrutinise managerial decisions, thereby curtailing managerial opportunism. Empirical evidence supports that diversified boards are associated with improved performance and enhanced reporting quality. For instance, Carter et al. (2003) find a positive association between board diversity and firm value. Adams and Ferreira (2009) show that gender diversity improves board monitoring performance. They find that women directors are more likely to join monitoring committees, have higher attendance rates, and are associated with more equity-based compensation. Finally, board diversity is associated with efficient risk taking through less investment in financially risky projects and more in R&D projects (Bernile et al., 2018).

On the other hand, diversity may increase cognitive conflict between board members, and thus disrupt the decision-making process (Hagendorff and Keasey, 2012, Berger et al., 2014, Fan et al., 2019). Also, when the firm appoints directors only because of their ethnicity and not for their skills, overall board qualifications will decrease (Ferreira, 2010). Thus, these theories predict that board diversity weakens board performance. Consistent with these views, Berger et al. (2014) show that gender-diversified boards increase risk taking in banks. They find that appointing a woman on the executive board results in an increase in risk-weighted assets and the Herfindahl Hirschman index for loan portfolio concentration. Also, Fan et al. (2019) suggest that, at high levels of diversity, the drawbacks of board diversity outweigh its benefits. They find an inverted U-shaped relationship between women on boards and earnings management in banks. With few women on a board, they find a positive association between earnings management and board diversity, consistent with the view that diversity improves board performance.

Directors and top executives are not randomly selected into firms. It is possible that boards select directors that share similar characteristics. Altogether, according to this view, directors with different demographic attributes are likely not to affect the decision-making process in the firm (Adams and Funk, 2012). A number of studies support this theory and show no effect of board diversity on decision making in firms. For example, Carter et al. (2010) show no relationship between diversified boards, in terms of gender and minority ethnic groups, and either return on assets or Tobin's Q. Similarly, Sila et al. (2016) report no association between the gender diversity of the board and risk taking.

Interestingly, some empirical findings show that different types of diversity have different effects on firm performance. Hagendorff and Keasey (2012) investigate the effect of different types of diversity on firm value around acquisition announcements. While they show that occupational diversity has a positive effect on firm value, they find that age diversity and gender diversity reduce firm value. They also find that gender diversity does not affect firm value after the acquisition announcements. Similarly, García-Meca et al. (2015) report that gender diversity improves bank performance, while they find that national diversity reduces it.

This thesis focuses on diversity at both the board of directors' level and the executive level. There are significant differences between the two groups in their roles and motivations. While executives are responsible for leading the day-to-day operations, the board of directors advises and monitors executives. On the one hand, executives are motivated to manage earnings to increase their compensation (Jensen, 2005, Efendi et al., 2007). On the other hand, directors are motivated to monitor managers to promote themselves as good monitors in the market for directors (Srinidhi et al., 2011). Chapter two of this thesis focuses on the role of women at the executive level, while chapters three and four investigate the effect of diversity at the board level.

1.2 Summary of chapters

1.2.1 Summary of Chapter 2

Chapter 2 investigates the effect of CFO gender on the timeliness of LLP reporting. Although many studies investigate the effect of either the gender diversity of the board or the gender of the CEO on firms' economic outcomes, very few papers examine the effect of CFOs. I investigate the effect of CFOs because they are arguably the executive with the most substantial effect on financial reporting quality (Beck and Mauldin, 2014, Ham et al., 2017). Banks are known to be risky and opaque (Acharya and Ryan, 2016), while women tend to be

more risk averse and transparent (Huang and Kisgen, 2013, Francis et al., 2014). Thus, I postulate that banks with women as CFOs follow conservative accounting policies and report timelier LLP than banks with men as CFOs. My findings confirm my prediction. I also find that banks that switch from a man to a woman as CFO observe improvement in LLP timeliness.

I use bank fixed effects to control for omitted variable bias related to time-invariant characteristics related to the bank. In addition, I use CEO fixed effects to control for time-invariant characteristics related to the CEO. Finally, I implement difference-in-differences analysis around CFO transition. To further ease the endogeneity issue, I include only voluntary CFO transitions. The results show that banks that replace their men CFOs with women CFOs experience improvement in LLP timeliness.

Chapter 2 suggests that women in banks are more risk averse and have higher ethical standards than men. This finding is consistent with the psychological literature and previous studies in finance (Eagly et al., 1995, Born et al., 1987, Huang and Kisgen, 2013, Barua et al., 2010, Fan et al., 2019). The results also support the calls to appoint more women in top positions in banks. Women may reduce the risks in banks, which are known to be motivated to take excessive risks (Beatty and Liao, 2014).

1.2.2 Summary of Chapter 3

Chapter 3 examines the effect of minorities on the timeliness of LLP reporting. The proportion of ethnic minorities in US boards is increasing, yet only a few studies investigate its impact on firms generally, and banks especially (Carter et al., 2003, Carter et al., 2010, García-Meca et al., 2015). Specifically, I investigate the effect of non-Caucasian independent directors on the timeliness of LLP. In addition, I examine whether the risk profile of the bank affects this association. The findings of this chapter suggest that directors from ethnic minorities improve the timeliness of LLP reporting, and the results are more pronounced during periods of increased risk. To control for omitted variable bias, I use bank fixed effects. Including bank fixed effects in the model accounts for unobservable time-invariant characteristics. Furthermore, I implement propensity score matching to control for self-selection bias. The results corroborate my main model and ensure that endogeneity does not drive my results.

The findings of this chapter are particularly relevant to the contemporary changes in boards. More than one in five new director appointments in the US are from ethnic minorities (Mishra, 2019). In addition, firms in the FTSE 350 are required to have appointed at least one director with an ethnic minority background by 2024, while firms in the FTSE 100 are required to have

achieved this target by 2021 (Guardian, 2017). I provide empirical evidence that ethnic diversity improves transparency in banks, especially amid periods of increased risk. In addition, the results reported in Chapter 3 are the first, to the best of my knowledge, to reveal the association between ethnic diversity and financial reporting in banks.

1.2.3 Summary of Chapter 4

Chapter 4 examines the effect of age diversity on financial reporting quality, in the light of recent calls to improve board diversity. Around 90% of directors of S&P500 firms believe that age diversity is an important criterion, but only 6% of firms in the S&P500 have directors younger than 50 years old (PricewaterhouseCoopers, 2019). Chapter 4 specifically explores the effect of age diversity on earnings management in banks. The findings reveal that age diversity reduces managers' ability to manage earnings. I also find that age diversity of boards improves loan quality. To ensure the robustness of my findings, I control for various bank, board, and CEO characteristics that might affect the decision to manage earnings. Moreover, I use a fixed effects estimator to control for unobservable characteristics that affect the relationship between age diversity and earnings management. Finally, I use propensity score matching to control for self-selection bias.

Only a few studies examine how age diversity affects board performance. These studies show that age diversity is associated with a decrease in firm value following acquisitions (Hagendorff and Keasey, 2012), lower profitability (Talavera et al., 2018), and less risk taking (Zhou et al., 2019). The results of this chapter contribute to this strand of literature by showing that age diversity improves earnings quality in banks. To the best of my knowledge, this study is the first to examine the effect of age diversity on boards' monitoring performance.

Furthermore, to extend our understanding on the effect of diversity on earnings quality, this chapter investigates the effect of age diversity on earnings management rather than LLP timeliness. Earnings management is another important indicator of earnings quality as it is the intentional manipulation of earnings for purposes such as meeting or beating earnings forecasts or increasing executive compensation (Dechow et al., 2010a). Previous studies linked earnings management to increased bank risks (Cohen et al., 2014) and reduced financial reporting transparency (Bushman and Williams, 2012, Tran et al., 2019a).

1.3 Thesis contributions

Altogether, this thesis makes several contributions. First, I contribute to the literature on bank accounting and governance. Interestingly, the effect of corporate governance on reporting

quality has received little attention, albeit banks are a key component of the financial system. It is also worth noting that most existing archival empirical studies in the area of corporate governance exclude financial firms from their samples. This thesis shows that CFO gender, and the ethnic and age diversity of the board are associated with the quality of financial reporting in banks. This is consistent with the suggestions of the Basel Committee on Banking Supervision (2015), which encourage banks to diversify their boards.

Second, this thesis contributes to the diversity literature by focusing on aspects that have been left unnoticed by prior studies in the area. The vast majority of previous studies focus solely on the gender diversity of the board or the CEO's gender (Liao et al., 2015, Ho et al., 2015, Faccio et al., 2016, Sila et al., 2016, Skała and Weill, 2018), while overlooking other forms of diversity such as age and ethnicity. I contribute to the diversity literature by providing empirical findings on the effect of CFO gender, the ethnic diversity of the board, and the age diversity of the board on financial reporting quality in banks.

Third, the Financial Accounting Standards Board and the International Accounting Standards Board have issued a new standard with regards to LLP reporting. This new standard deviates from the long-standing, objective incurred-loss model, with a new, subjective expected-loss model. While the incurred-loss model requires banks to report LLP when there is objective evidence of a credit loss before the balance sheet date, the expected-loss model requires the management to report expected credit losses. One of the concerns regarding the new regime is that it places more discretion in the managers' hands. The findings of this thesis show that diversity in the top-tier positions in banks could play a role in easing these concerns.

Fourth, bank regulators are interested in how they might improve bank governance. For example, the Basel Committee on Banking Supervision (2015) states *"Effective corporate governance is critical to the proper functioning of the banking sector and the economy as a whole"*. This thesis provides a number of suggestions on how corporate governance in banks might be improved. In addition, the results provide empirical evidence that board diversity is beneficial for banks, consistent with the Basel Committee on Banking Supervision (2015)'s recommendation.

The remainder of this thesis is organised as follows. Chapter 2 investigates the effect of CFO gender on the timeliness of LLP reporting, while Chapter 3 examines the effect of the ethnic diversity of the board on LLP timeliness. Chapter 4 investigates the effect of the age diversity of the board on earnings management in banks.

Chapter 2: CFO gender and financial reporting transparency in banks

Abstract

We investigate the effect of CFO gender on the timeliness of loan loss provision (LLP) reporting using a large sample of US banks from 2007 to 2016. My findings show that women CFOs are associated with timelier forward-looking provisioning than men counterparts, suggesting that they follow a more transparent approach to financial reporting policies. My results hold under different model specifications, including the use of bank and CEO fixed effects. I further address endogeneity concerns by showing that the timeliness of LLP reporting improves significantly for banks experiencing a man-followed-by-woman CFO transition. Overall, my study supports the notion that women CFOs are associated with higher financial reporting transparency and provides further insights into how CFO gender affects risk-aversion and ethics in banks, with wider implications about the importance of women's representation in the finance-based industry.

"What would have happened if Lehman Brothers were Lehman Sisters?"

Christine Lagarde, President of the European Central Bank (ECB) & former Managing Director of the International Monetary Fund (IMF)

"The collapse of Lehman Brothers would never have happened if there'd been Lehman Sisters there with them! Why? Because women managers are naturally more risk-averse."

Neelie Kroes, former European Union Commissioner for Competition (2004-2010)

1. Introduction

Banks were at the heart of the 2008/09 financial crisis, with a number of them arguably engaging in excessive risk-taking and the use of aggressive accounting methods in the preceding years (Barth and Landsman 2010). A large body of research indicates that women are more risk-averse and hold higher ethical standards than men (Eagly et al., 1995, Niessen and Ruenzi, 2007, Croson and Gneezy, 2009, Ibrahim and Angelidis, 2009, Gul et al., 2013, Huang and Kisgen, 2013); as a corollary, it has been suggested that behavioural differences between men and women could play an important role in the avoidance of financial crises or, at least, in making them less severe (Van Staveren, 2014). Academics and regulators have

proposed actions related to preventing such crises in the future and focused, inter alia, on gender-diversity-related issues endemic to the financial services industry. For example, as a way to reduce excessive risk-taking, there have been arguments calling for an increase in the number of women in top positions in banking (Palvia et al., 2015, Skała and Weill, 2018). However, Adams and Ragunathan (2017) argue that women who seek top positions in risky industries have similar characteristics to their men counterparts, while Berger et al. (2014) argue that gender-diverse boards do not operate as efficiently as homogeneous boards during financial crisis periods. Overall, the conclusions of these studies are mixed and conflicting, suggesting that the effect of women executives on the stability of the banking industry still requires further investigation.

Motivated by this debate in the literature, my study examines the relationship between women executives and financial reporting transparency, arguably an important determinant of stability in banking institutions. My examination is supported by literature, as discussed above, which suggests that the quality of financial reporting played a central role in the 2008/09 financial crisis (see, e.g, Barth and Landsman (2010)). Similarly I am motivated by studies providing evidence that women CFOs are associated with improved financial reporting transparency (Barua et al., 2010, Francis et al., 2015). Reporting transparency is associated with a decreased risk, since it allows external stakeholders to take early actions (Bushman and Williams, 2012); it can also be considered a manifestation of higher ethical standards, since it limits managerial opportunism (Bushman et al., 2011, Ho et al., 2015). I thus add to existing research on gender-related issues in the banking industry, which has so far mainly focused on the effect of gender on risk-taking.

One of the areas most useful for examining the effects of financial reporting on the banking industry during the financial crisis was the recognition of loan loss provision (LLP), an amount set aside to cover future credit losses. Overall, earnings management studies in banking focus almost exclusively on LLP reporting for a number of reasons. First, LLP is the largest single bank accrual, accounting for more than 50% of bank accruals (Bushman and Williams, 2015, Beatty and Liao, 2014). Second, LLP has a material effect on bank performance, and its estimation involves a substantial degree of managerial discretion (Beatty and Liao, 2014). Third, since loans comprise a significant fraction of banks' assets, LLP is considered an important indicator of a bank's risk. Evidence suggests that banks that failed to report LLP in a timely manner prior to the financial crisis were more likely to fail during that period (Jin et al., 2018). In addition, Bushman and Williams (2012) show that banks reporting timelier LLP

have more external discipline over risk-taking[1], while Bushman and Williams (2015) find that banks associated with timelier LLP reporting are less risky. For these reasons, LLP provides an excellent avenue for analysing and gaining further insights into managerial risk-taking in the banking industry (Nichols et al., 2009).

The literature on the timeliness of LLP reporting follows a view on the timeliness of earnings developed by Basu (1997), and regards earnings to be timely when bad news is recognised faster than good news. In the LLP context, timelier LLP reporting means that reported LLP should better reflect an anticipation of future credit losses generated from the current loans. Empirically, this is captured by regressing reported LLP on forward and current changes in non-performing loans (NPL) (Beatty and Liao, 2014). That is, for LLP to be timely, it should incorporate bad loans before they become non-performing.

In this study, I examine whether the presence of women (men) CFOs is associated with more (less) transparent LLP reporting practices. I focus on CFOs in particular, because accounting literature suggests that they are the executives playing the most influential role in financial reporting decision-making (Chava and Purnanandam, 2010, Ge et al., 2011, Feng et al., 2011). My study is also informed by psychology-related research providing evidence of gender-related differences relative to men's and women's approaches to decision-making processes (Born et al., 1987, Eagly and Karau, 1991, Eagly et al., 1995, Croson and Gneezy, 2009). Overall, extant research indicates that women are more risk-averse and apply higher ethical standards than men (Vermeir and Van Kenhove, 2008, Croson and Gneezy, 2009). Following up on these studies, scholars in accounting and finance provide empirical evidence that women directors and executives are more risk-averse and more compliant with regulations than men executives (Francis et al., 2014, Francis et al., 2015, García-Sánchez et al., 2017, Zalata et al., 2018a, Zalata et al., 2018b, Skała and Weill, 2018). Prior research has also investigated the effect of the CFO's gender on the firm's financial reporting quality, and the relevant findings show that women CFOs are associated with higher earnings quality (Barua et al., 2010, Liu et al., 2016) and income-decreasing discretionary accruals (Peni and Vähämaa, 2010). In the same spirit, Francis et al. (2015) show a positive relationship between conservative accounting policies and the presence of women CFOs, which is more pronounced when there is high litigation, systematic or default risk.

Based on the above literature, I predict that women CFOs are associated with timelier LLP recognition than men CFOs. This can mainly be attributed to two reasons: First, their lower

[1] LLP recognition is considered timely when it reflects the changes in current and future non-performing loans.

tolerance of risk motivates women executives to use conservative accounting methods and, second, their arguably higher ethical standards are likely to encourage more transparent financial reporting decision-making than will happen under men CFOs.

We use a sample of US bank holding companies available in ExecuComp. I believe that the US banking system is an interesting setting for my research for two reasons. First, the US banking system played a significant role in the financial crisis by engaging heavily in risky investments. It is therefore interesting to examine how the genders of CFOs could have affected this relationship. Second, the gender diversity discourse in the US is particularly active, with the majority of gender studies investigating the US setting.

We apply a model developed by Beatty and Liao (2014) to estimate the discretionary component of LLP that relates to future NPL. As discussed above, the assumption is that timely LLP should include bad loans before they become non-performing. Assuming that women CFOs are risk-averse and more ethical in their reporting decisions, I expect them to report timelier LLP than men CFOs. However, if women in the banking industry are no different to men, I will not observe any significant difference between the two groups. My results suggest that women CFOs report timelier LLP than men CFOs and that women CFOs incorporate more forward-looking information in their LLP reporting. Moreover, since the level of bank risk influences financial reporting decisions (Hodder et al., 2002), I use regulatory capital as a proxy for banks' attitude towards risk[2] and repeat my analysis after splitting my sample in risky and non-risky banks. My results suggest that women CFOs in both groups report LLP in a timelier manner than men CFOs.

To address endogeneity concerns related to omitted variable biases, I use bank or CEO fixed effects. Bank fixed effects control for time-invariant firm characteristics, such as bank culture, while CEO fixed effects control for omitted variable bias associated with time-invariant characteristics of the CEO. In addition, since a change in a firm's culture is usually associated with a change in CEO (Van den Steen, 2010), CEO fixed effects control, to a certain extent, for changes in firm culture. In an additional test, I also find that the effect of CFO gender on the timeliness of LLP reporting is incremental to the effect of the financial expertise of the audit committee and the gender diversity of the board of directors.

Finally, to better establish a causal link and alleviate reverse-causality concerns, I use CFO replacement as a quasi-natural experiment. I argue that a causal relationship may be more

[2] Since regulatory capital is a long-term strategic decision taken by the board of directors (El Sood 2012; Anginer et al. 2016), it is reasonable to use it as a proxy for banks' attitude towards risk.

evident if banks with man-followed-by-woman (MFW) CFOs experience an improvement in the timeliness of their LLP reporting. I find that these banks do experience an improvement in the timeliness of their LLP reporting after the transition, while firms with man-followed-by-man (MFM) CFO transitions do not experience such an improvement. I use prior literature to classify CFO transitions as voluntary (Parrino et al., 2003, Naveen, 2006, Gao et al., 2017) and the results hold when I limit my analysis to this type of CFO replacement. Voluntary CFO transition rules out the possibility of the CFO being replaced as part of a strategic change by the bank, which in return alleviates self-selection bias concerns. Overall, my results show that LLP reported by women CFOs is more representative of the riskiness of the loan portfolios and, hence, is more transparent.

This study contributes to the literature in several ways. First, I contribute to the banking literature by showing that women in top banking management positions can play an important role in improving the transparency of financial reporting. My findings hence complement prior research, mainly focusing so far on the links between women's representation in top management positions in the banking industry and a reduction in risk (Stephanou, 2010, Bushman and Williams, 2012). My study also contributes to the wider stream of literature that links women to ethical decisions (Bernardi and Arnold Sr, 1997, Weeks et al., 1999, Valentine and Rittenburg, 2004, Simga-Mugan et al., 2005, Lund, 2008, Vermeir and Van Kenhove, 2008, Ibrahim and Angelidis, 2009, Ho et al., 2015). I specifically show that women CFOs are associated with conservative financial reporting decisions, which have a negative association with managerial opportunism (Nikolaev, 2010) and accounting fraud (Schrand and Zechman, 2012).

Second, my study contributes to the literature on gender and financial-reporting-related choices, by investigating the effect of women CFOs in banks on accounting policy. My study is substantially different to that of García-Sánchez et al. (2017), who investigate the effect of a gender-diverse board of directors on banks' financial reporting, in the following ways. First, while García-Sánchez et al. (2017) investigate the effect of gender diversity in the board of directors as a whole, this study focuses on the CFO role. CFOs, as insiders, have different incentives to outsiders (non-executive board members) regarding financial reporting decisions. In addition, I argue that, since CFOs are responsible for the preparation of financial reports, they have an informational advantage over the board of directors, who monitor the preparation process. Consistent with this argument, I find that the gender of the CFO has an influence on the timeliness of the LLP reporting that is incremental to and stronger than that of the gender diversity of the board of directors or the audit committee. In addition, my study covers the period between 2007 and 2016, while García-Sánchez et al. (2017) cover the period

between 2004 and 2010. I thus make use of a longer and more contemporaneous time-series, including the post-financial-crisis years. Finally, this study focuses exclusively on US banks, while García-Sánchez et al. (2017) cover a set of international banks. By limiting my sample to a single country, I ensure that my results are not affected by unobservable differences in accounting and legal rules (Tran et al., 2019b).

Third, my study informs the literature related to upper echelons theory (Hambrick and Mason, 1984), which considers firms to be a reflection of their top executives. My analysis suggests that women are associated with more conservative LLP reporting, which may indicate executives' attitude towards risk in companies where CFOs are women. In addition, since LLP has a material effect on bank earnings and capital strength, and requires a substantial degree of managerial judgment, it provides a good indication of managers' tolerance of risk (Nichols et al., 2009). Moreover, existing accounting research provides evidence that risk-averse managers are more likely to choose conservative accounting policies (Ahmed and Duellman, 2013, Kanagaretnam et al., 2014, Plöckinger et al., 2016). Therefore, I argue that my results improve my understanding of how gender differences affect bank risk (Huang and Kisgen, 2013, Palvia et al., 2015, Faccio et al., 2016).

Finally, despite the considerable attention paid to LLP reporting in the existing literature, little attention has been given to the factors that cause heterogeneity in LLP reporting in the first place. I thus contribute to the bank accounting literature by showing that CFO gender differences have a significant influence on LLP reporting decisions at a firm level.

We believe my findings have practical implications and enlighten the discussion on the effectiveness of imposing gender quotas in corporate boards. My findings suggest that an increase in the number of women top executives could drive change in the finance-based industry by improving transparency in corporate decision-making and hence reducing banking risks. In addition, the results of this study are particularly informative for the implementation of the new expected-loss model in LLP reporting (Beck and Narayanamoorthy, 2013, Norden and Stoian, 2014, Curcio and Hasan, 2015, Cohen and Edwards, 2017). Although the expected-loss model is more conservative than the incurred-loss model, it gives more discretion to the managers in relation to LLP reporting. Thus, I expect to observe an increase in the heterogeneity in LLP reporting across banks. My findings give an early suggestion that gender differences will play a major role in this heterogeneity. I show that, under the incurred-loss system, women CFOs use their judgment to report timelier LLP than men CFOs.

The remainder of this paper is organised as follows. In section 2, I review the relevant literature, and in section 3, I present the study's methodology. Section 4 reports the main

findings of the study, while section 5 reports the results of robustness tests. Finally, I conclude in section 6.

2. Literature review and hypotheses development

2.1. LLP reporting, bank risk and the financial crisis

Studies argue that LLP reporting contributed heavily to the global financial crisis of 2008/09 (Barth and Landsman, 2010, Olszak et al., 2017). Relatedly, a number of studies conclude that timely recognition of LLP leads to a reduction in bank risk and an improvement in bank performance. For example, Akins et al. (2017) find that timely LLP recognition helps banks take corrective actions in a timely manner and reduces lending corruption. Beatty and Liao (2011) report banks that recognised LLP in a timelier manner as having been more able to issue loans during the financial crisis, which, in turn, improved their performance during the crisis and saved them from failing. Bushman and Williams (2015) report that banks delaying LLP recognition have higher systematic and liquidity risks. Finally, Jin et al. (2018) show banks that built higher loan loss reserves before the crisis to have been more likely to survive it.

In addition, the literature identifies transparency of reporting as a way in which LLP reporting affects bank risks. Timelier LLP reporting is considered a more transparent reporting behaviour, which better reflects a bank's risks. Bushman and Williams (2012) argue that timelier LLP provides better information to the shareholders, which allows them to more effectively monitor banks' activities and discipline banks' risk-taking. In particular, they find a negative association between timelier LLP recognition and risk-taking.

2.2. Gender differences

Psychology studies suggest that women are more risk-averse and less optimistic than men and that they have higher moral standards (Born et al., 1987, Eagly and Karau, 1991, Eagly et al., 1995, Hinz et al., 1997, Collins, 2000, Simga-Mugan et al., 2005, Niessen and Ruenzi, 2007, Niederle and Vesterlund, 2007, Ibrahim and Angelidis, 2009, Croson and Gneezy, 2009). Accounting and finance literature supports many of the findings from the above psychology studies. Findings suggest that women executives are less overconfident in their financial decisions (Huang and Kisgen, 2013), and associated with lower overall firm risk, as measured by leverage, earnings volatility, and likelihood of survival (Faccio et al., 2016). A higher number of women is also associated with a more ethical work climate, which eventually discourages earnings management (Ho et al., 2015), and the valuing of ethics as an important selection criterion for recruiting accountants (Ibrahim and Angelidis, 2009).

In closer relation to the banking context, Bellucci et al. (2010) find that women loan officers are stricter in awarding loans to new borrowers and are also associated with lower amounts of loan defaults than men loan officers Beck et al. (2012). Palvia et al. (2015) show that banks led by women CEOs or women chairpersons held higher regulatory capital during the global financial crisis. However, Berger et al. (2014) show that higher gender diversity in German bank boards is associated with higher risk-taking, while Adams and Ragunathan (2017) show that women in the banking industry have a higher tolerance of risk than women in other industries. More generally, Hagendorff and Keasey (2012) report that higher gender diversity in bank boards is not associated with positive market reactions in terms of the expected value of mergers. Overall, this conflicting evidence encourages further studies on the effect of women on decision-making processes in banks.

2.3. The effect of gender on financial reporting

The literature on the effect of CFO gender on financial reporting decisions suggests that women CFOs tend to apply conservative accounting policies. Barua et al. (2010) show that firms with women CFOs are associated with higher accrual quality, while Peni and Vähämaa (2010) find that firms with women CFOs are associated with income-decreasing discretionary accruals. Consistent with the previous findings, Francis et al. (2015) show that women CFOs are positively associated with accounting conservatism, as measured by the market-to-book ratio, non-operating accruals, and the time-series skewness of earnings. Specifically, they find that the level of accounting conservatism increases following men-to-women CFO transition. Liu et al. (2016) extend this literature by exploring the Chinese market and show findings that are similar to those in the US. They also find that women CFOs are associated with lower total accruals, discretionary accruals, and real earnings management. In addition, they report that departing men CFOs use more aggressive accounting to increase earnings than departing women CFOs, while newly appointed men CFOs manage earnings downwards more than newly appointed women CFOs. Confirming the perception that women are more risk-averse, Francis et al. (2015) show that women CFOs report more conservatively when there is a legal risk, systematic risk, default risk, or management turnover risk.

According to Gul et al. (2013), having more women on the board results in more accurate analyst forecasts. Srinidhi et al. (2011) find that firms with gender-diverse boards produce financial reports with higher earnings quality, and Zalata et al. (2018b) show that a higher number of women on the audit committee significantly decreases earnings management. Finally, García-Sánchez et al. (2017) find that a diverse board is positively associated with the timeliness of LLP. This finding indicates that gender diversity enhances the information content of LLP reporting. I extend the findings of García-Sánchez et al. (2017) to include the

effect of women CFOs on the timeliness of LLP recognition. Insiders, such as CFOs (executives), have different incentives than outsiders (independent board members). Insiders have incentives to hide bad information, to avoid a reduction in compensation or dismissal. On the other hand, outsiders have the incentive to monitor managers and ensure a higher quality of financial reporting, to preserve their reputation as independent board members (Jensen and Meckling, 1976, Fama and Jensen, 1983, Srinidhi et al., 2011). Since CFOs have the most direct impact on financial reporting decisions, I focus on the effect of women CFOs on financial reporting quality.

2.4. Hypotheses development

CFOs are responsible for the preparation and supervision of financial reporting; hence, they are in a position to substantially influence accounting judgments. For example, Ge et al. (2011) provide evidence that CFOs have a significant influence on discretionary accounting choices, whereas Ham et al. (2017) find that CFO personality traits such as narcissism have a significantly adverse effect on the quality of financial reporting. LLP reporting includes a high level of discretion; hence, CFOs exert a great influence over it. Black and Gallemore (2013) show that overconfident CFOs understate LLP in financial firms, while, on the other hand, they indicate that there is no association between overconfident CEOs and LLP. Additionally, it is the responsibility of the CFO to prevent the manipulation of financial reports. Feng et al. (2011) find that CFOs bear considerable legal costs in the event of accounting manipulation. Ultimately, CFOs are typically accountable for financial reporting quality.

Higher ethical standards held by women suggest they will use their discretion to report in an honest manner (Ho et al., 2015, Palvia et al., 2015). In addition, women tend to be more risk-averse (Croson and Gneezy, 2009, Huang and Kisgen, 2013, Palvia et al., 2015, Francis et al., 2014, Francis et al., 2015), and are therefore more likely to report actual earnings due to the legal and reputational costs associated with earnings manipulation. Hence, women may be motivated to report losses on a timelier basis. Given this documented impact of behavioural differences between genders on financial reporting decisions, I postulate that the gender of the CFO plays an important role in explaining the heterogeneity in LLP timeliness. This leads me to my first hypothesis.

Hypothesis 1: *Women CFOs are more likely to report LLP in a timely manner*

To ensure the soundness of banks, regulators monitor their capital closely (Pérez et al., 2008, Barth et al., 2017) and require them to hold a minimum amount of Tier 1 capital ratio. When a bank's capital falls below this minimum, regulators might take strong actions, such as preventing them from lending. Prior evidence shows that this motivates low-capital banks to

manage earnings and delay LLP recognition to avoid such penalties (Ahmed et al., 1999, El Sood, 2012, Curcio and Hasan, 2015, Barth et al., 2017). At the same time, choosing the level of tier 1 capital ratio is a strategic decision taken by the board of directors (Anginer et al., 2016). Based on this, it is plausible to assume that low-capital banks tend to implement risky strategies and hence are more likely to use aggressive accounting (Shrieves and Dahl, 1992, Beatty et al., 2002, Kravet, 2014). Overall, it is possible that low-capital banks impose pressure on their CFOs to delay LLP recognition.

On the other hand, such a delay in LLP recognition can also be costly. In particular, it inflates banks' capital and reduces their ability to withstand a financial crisis (Cohen et al., 2014, Jin et al., 2018). During an economic downturn, banks that have delayed LLP recognition in earlier periods will be forced to reverse these delays, thus reducing their capital and lending ability. Eventually, this can accentuate the damaging effect of the economic downturn on these banks, potentially leading to their collapse (Beck and Narayanamoorthy, 2013). As a consequence, regulators scrutinise banks with low regulatory capital more than other banks (Beck and Narayanamoorthy, 2013).

Based on the previous discussion of the presumption that women CFOs hold higher ethical standards and are more risk-averse than men CFOs (Vermeir and Van Kenhove, 2008, Huang and Kisgen, 2013), I still expect to find them to be associated with timelier LLP than their men counterparts in both high- and low-capital banks. However, due to the pressure to manage earnings, I contend that the difference between men and women CFOs' LLP reporting timeliness will be lower in low-capital banks.

Hypothesis 2: *Capital constraints moderate the association between the presence of a woman CFO and the timeliness of LLP reporting.*

3. Data and methodology

3.1. Data

My analysis is based on a sample of listed financial institutions, accounting data from Compustat, gender and executive compensation data from ExecuComp, and board of directors' data from Institutional Shareholder Services (ISS). The sample comprises US banks within the period 2007 to 2016. The reason for choosing 2007 as a starting point relates to the availability of CFO and financial expertise data. Compustat CFO data start in 2006, while the financial expertise data from ISS start in 2007. Therefore, I start my data collection in the year 2007. I merge the data from these different sources using the six-digit CUSIP identifiers. I omit observations with missing variables. Table 2-1 shows the number of observations per

year. I lose some more observations in 2007 due to the fact that some of my variables are lagged. In total, my sample includes 2,760 observations from 119 unique banks.

Table 2-1 *Observations' distribution per year*

The table below shows the number of observations and unique banks per year.

Year	Observations	Number of unique banks
2007	87	47
2008	231	77
2009	292	77
2010	293	76
2011	299	79
2012	313	80
2013	323	85
2014	334	86
2015	332	90
2016	256	91
Total	**2760**	**119 unique banks**

3.2. Methodology

As previously discussed, LLP recognition is considered timely when it reflects changes in current and future NPL. To investigate this, I employ a model developed by Beatty and Liao (2014). This model and others that are similar have been used in prior studies investigating the timeliness of LLP recognition (Bushman and Williams, 2012, Black and Gallemore, 2013, García-Sánchez et al., 2017, Nicoletti, 2018).

Beatty and Liao's (2014) model is illustrated below:

$$\mathrm{LLP_{it}} = \alpha_0 + \alpha_1 \text{change in } \mathrm{NPL_{it+1}} + \alpha_2 \text{change in } \mathrm{NPL_{it}} + \alpha_3 \text{change in } \mathrm{NPL_{it-1}} + \alpha_4 \text{change in } \mathrm{NPL_{it-2}} + \alpha_5 \ln \mathrm{Assets_{it-1}} + \alpha_6 \text{change in } \mathrm{loan_{it}} + \alpha_7 \text{earnings before } \mathrm{LLP_{it}} + \alpha_8 \mathrm{Tier1_{it-1}} + \alpha_9 \%\Delta\, \mathrm{GDP_t} + \alpha_{10}\, \%\Delta \mathrm{unemployment_t} + \alpha_{11} \%\Delta \mathit{Case\_Shiller\ house\ index}_{\mathrm{t}} + \varepsilon_{\mathrm{it}} \qquad \text{……….(1)}$$

LLP is loan loss provision as a percentage of total loans for firm *i* and quarter *t*. The variable *change in NPL* represents the change in NPL over the quarter. An NPL is the amount of a loan on which the client does not make any interest or principal payment. The NPL is a significant factor in determining LLP. This model includes future (t+1), current (t), and prior (t-1, t-2) NPL, due to banks' use of past, current, and forward-looking information to estimate LLP (Beaver and Engel, 1996, Bushman and Williams, 2012, Beatty and Liao, 2014, Bushman and Williams, 2015). A positive association between *LLP* and *change in* NPL_{t+1} and *change in*

NPL$_t$ would indicate that LLP was recognised in a timely manner (Bushman and Williams, 2012, Black and Gallemore, 2013, Beatty and Liao, 2014, Nicoletti, 2018). In particular, a positive association between *change in NPL$_{t+1}$* and *LLP* would indicate that banks incorporated their private information on loan portfolio risk by recognising LLP before bad loans became non-performing, while a positive relationship between *change in NPL$_t$* and *LLP* would suggest that banks incorporated current NPL in their LLP recognition. Together, *change in NPL$_{t+1}$* and *change in NPL$_t$* capture the timeliness of LLP reporting by banks.

We use *ln Assets* to control for bank size. It is important to control for bank size in LLP models because the level of regulatory scrutiny of LLP reporting varies according to bank size (Bushman and Williams, 2012, Beck and Narayanamoorthy, 2013). The variable *change in loan* controls for the change in the size of a bank's loan portfolio. To capture the effect of earnings management and capital management (Collins et al., 1995, Beatty et al., 1995, Ahmed et al., 1999), I extend the above model by including earnings before extraordinary items and LLP (*earnings before LLP$_t$*), and the lagged Tier 1 capital ratio (*Tier1$_{t-1}$*). Furthermore, the model includes *%ΔGDP$_t$*, *%Δunemployment$_t$*, and *%ΔCase_Shiller house index$_t$* to control for macroeconomic factors that affect LLP levels.

To capture the effect of women CFOs on LLP reporting, I adjust model (1) as follows:

$$\begin{aligned}\text{LLP}_{it} = {} & \alpha_0 + \alpha_1 \text{change in NPL}_{it+1} + \alpha_2 \text{change in NPL}_{it} + \alpha_3 \text{change in NPL}_{it-1} + \\ & \alpha_4 \text{change in NPL}_{it-2} + \alpha_5 \ln \text{Assets}_{it-1} + \alpha_6 \text{change in loan}_{it} + \\ & \alpha_7 \text{earnings before LLP}_{it} + \alpha_8 \text{Tier1}_{it-1} + \alpha_9 \text{CFO gender}_{it} + \alpha_{10} (\text{change in NPL}_{it+1} * \\ & \text{CFO gender}_{it}) + \alpha_{11} (\text{change in NPL}_{it} * \text{CFO gender}_{it}) + \alpha_{12} \text{CFO ownership}_{it-1} + \\ & \alpha_{13} \text{CEO ownership}_{it-1} + \alpha_{14} \text{Independent directors on BOD \%}_{it} + \\ & \alpha_{15} \text{Financial experts on audit committee \%}_{it} + \alpha_{16} \text{board size}_{it} + \alpha_{17} \text{CEO/} \\ & \text{chairman duality}_{it} + \alpha_{18} \text{ gender diversity \%}_{it} + \text{Fixed effects} + \varepsilon_{it}\end{aligned}$$

……..…….(2)

We use a dummy variable to indicate whether the CFO is a woman. Then, I interact the *CFO gender* variable with both *change in NPL$_{t+1}$* and *change in NPL$_t$* to capture the effect of women CFOs on the timeliness of LLP. If women CFOs are associated with enhanced LLP timeliness, a positive sign will be expected for both α_{10} and α_{11}.

Considering that one of the primary duties of the board of directors is to monitor the financial reports produced by managers, board of directors' characteristics play a significant role in financial reporting decision-making. First, I control for the independence of the board of directors using the percentage of independent board members *(% of independent directors in*

the BOD). Independent board directors are more likely to challenge managers over financial reporting decisions (Beasley, 1996). Second, since banks are complex institutions, large boards are expected to be more effective in monitoring managers' actions (De Andres and Vallelado, 2008, Adams and Mehran, 2012). On the other hand, studies also suggest that small boards have fewer coordination problems and can thus be more effective (Yermack, 1996, Bushman and Smith, 2001, Pathan, 2009). Consequently, I use *board size* to control for this factor. Third, boards with good knowledge of financial reporting and the banking industry are expected to challenge managers regarding their financial reporting choices ((Beasley, 1996, Klein, 2002, Badolato et al., 2014, Agrawal and Cooper, 2017). Hence, I control for such expertise on the audit committee *(financial experts on audit committee %*), using the SEC's definition of a financial expert[3]. Finally, I control for the gender diversity among the independent directors on the board of directors (*gender diversity %*), as García-Sánchez et al. (2017) show that banks with more diverse boards have timelier and more conservative financial reporting.

Governance studies show that insiders' ownership affects firms' decision-making (Westman, 2011, Berger et al., 2016). Therefore, I control for *CFO* and *CEO ownership*. It is plausible that CFOs with higher ownership of a firm will select accounting policies that increase firm value, which may result in the hiding of negative news. I use *CEO ownership* to control for CEO incentives that might affect the choice of accounting policies. Studies indicating that CEOs affect firms' reporting decisions are extensive (Kalyta, 2009, Dechow et al., 2010b). For example, Feng et al. (2011) provide evidence that, when CEOs have relatively large ownership of a firm, they compel the CFOs to choose accounting policies that increase firm value. I also control for CEO power in the board. A powerful CEO can limit information flows to the board and hence impair its ability to adequately monitor firm decisions (Fama and Jensen, 1983, Vallascas et al., 2017). For example, Farber (2005) shows that firms with CEO/chairman duality are more likely to be involved in financial reporting fraud. Consistent with this, Efendi et al. (2007) report that firms with CEO/chairman duality are more likely to have financial reporting misstatements. Therefore, I control for *CEO/chairman duality*. It is worth noting that *CEO ownership* and *CFO ownership* also control for executives' power. Higher levels of executive ownership can lead to managerial entrenchment and consequently

[3] The SEC states that individuals who qualify as financial experts must have at least one of the following: "(i) Education and experience 1) in a position as a principal financial or accounting officer, controller, public accountant, or auditor, or 2) in a position involving similar functions; (ii) Experience in actively supervising a principal financial or accounting officer, controller, public accountant, or auditor (or an individual performing similar functions); (iii) Experience in overseeing or assessing companies or public accountants in the preparation, auditing, or evaluation of financial statements; or (iv) Other relevant experience."(SEC, 2003)

increase their power against the board (Denis et al., 1997, Goyal and Park, 2002). Definitions of all variables are available in appendix A.

Importantly, I control for time-variant characteristics that affect LLP reporting by using time fixed effects (quarters). I implement a fixed effects estimator to control for bank or CEO time-invariant heterogeneity. This approach is suitable for my setting because governance characteristics tend to change over a long period of time; thus, using bank fixed effects mitigates any endogeneity concerns related to omitted variables which are associated with time-invariant characteristics. Additionally, since changes in firm culture are typically connected to CEO replacements (Fiordelisi and Ricci, 2014), controlling for CEO fixed effects controls for a number of omitted variables related to changes in bank culture. Following Nicoletti (2018), I replace macroeconomic variables with time fixed effects. To control for heteroscedasticity, I use robust standard errors clustered at the bank level.

4. Results

4.1. Descriptive statistics

Table 2-2 provides descriptive statistics for the study sample. Continuous variables are winsorised at the 1st and the 99th percentiles. The table shows that only 4% of banks in my sample have women CFOs. The low percentage of women CFOs highlights the under-representation of women in top executive positions in banks. Additionally, the table shows that the average reported LLP scaled by lagged total loans is 0.0019, the minimum is -0.0064 and the maximum is 0.0404. In monetary terms, this translates to an average of $148 million, and a maximum (minimum) of nearly $13 billion (-$543 million). LLP is significant relative to earnings in monetary terms. Average *earnings before LLP* in my sample is 0.005 when scaled by lagged total loans, and almost $46 million in monetary terms. On average, *change in* NPL_t is 0.00018, whereas the maximum (minimum) is 0.0178 (-0.011). Loans in my sample increase by an average of 1.78% quarterly. The average bank size in my sample is $107 billion. The largest bank has total assets of $2.5 trillion, the smallest almost $2 billion. Average Tier 1 capital ratio in banks is 12.3%, while the maximum is 20%. This indicates that most banks in my sample are well-capitalised. The table shows that independent women directors represent 13% of boards, while the average percentage of independent directors in total is 80%. The percentage of financial experts on banks' audit committees is approximately 45%. On average, the board size of the banks in my sample is nearly 12 members. The largest board in my sample has 18 members, while the smallest board has just 7. The CEOs (CFOs) in my sample own 0.7% (0.1%) of their firms, on average. The CEO (CFO) with the largest inside

ownership owns 0.8% (0.8%) of their firm. Only 7.8% of banks in my sample have chairmen CEOs.

Table 2-2 *Summary statistics*

This table reports summary statistics for the sample of US commercial banks. *Assets* is the book value of the bank's total assets in millions. All other variable definitions are available in Appendix A.

Variable	Observations	Mean	Standard deviation	Min.	Max.
CFO gender$_t$	2760	0.0427	0.202	0	1
LLP$_t$	2760	0.0019	0.0033	-0.0064	0.0404
Change in NPL$_t$	2760	0.00018	0.003812	-0.0111	0.0178
Change in loans$_t$	2760	0.0178	0.04787	-0.0697	0.2890
Assets ($ million)$_{t-1}$	2760	107169	375828	1980	2577148
Earnings before LLP$_t$	2760	0.00547	0.00342	-0.0043	0.0289
Tier1$_{t-1}$	2760	0.1223	0.0264	0.0681	0.2005
Independent directors on BOD %$_t$	2760	0.7976	0.10426	0.333	1
Financial experts on audit committee %$_t$	2760	0.4456	0.283	0	1
CEO ownership$_{t-1}$	2760	0.00784	0.01218	0	0.008
CFO ownership$_{t-1}$	2760	0.0012	0.0016	0	0.0083
Board size$_t$	2760	11.92	2.448	7	18
CEO/chairman duality$_t$	2760	0.07789	0.2680	0	1

Table 2-3 presents the difference between means for samples of banks with women CFOs and samples with men CFOs. The results show that women CFOs work in larger banks. The average total assets of banks with women CFOs is $348 billion, whereas the average for the banks with men CFOs is $96 billion. Table 2-3 indicates the average Tier 1 risk-based capital ratio for banks with women CFOs to be 12.07%, compared to 12.2% for banks with men CFOs. Regarding organisational performance, the results indicate that banks with men CFOs outperform banks with women CFOs in terms of earnings before LLP scaled by total loans. Furthermore, there is an insignificant difference in the level of reported LLP between the two subsamples. With regards to governance characteristics, women CFOs tend to be employed in firms with less independent boards, more financial experts on their audit committees, and smaller boards. Women CFOs also mainly work in banks where the CEO and chairman positions are held by the same person. Due to the significant differences among the firm and governance characteristics between the two groups, I control for these elements in the multivariate analysis.

Table 2-3 *Differences in means between the two groups (men and women CFOs)*

This table reports the differences between the means for a sample of banks with men CFOs and a sample of banks with women CFOs. *Assets* is the book value of the bank's total assets in millions. All other variable definitions are available in Appendix A. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Variables	**Men CFO sample [1]**		**Women CFO sample [2]**		**Diff [1]-[2]**
	Observations	**Mean**	**Observations**	**Mean**	
LLP $_t$	2642	0.00196	118	0.0016	`0.00036
Change in NPL$_t$	2642	0.00019	118	0.00006	0.00013
Change in loans$_t$	2642	0.01785	118	0.01777	0.00008
Assets ($ million)$_{t-1}$	2642	96,411	118	348,039	-251,628***
Earnings before LLP$_t$	2642	0.0055	118	0.0049	0.0006**
Tier1$_{t-1}$	2642	12.20%	118	12.07%	0.13%
Independent directors on BOD %$_t$	2642	79.60%	118	82.40%	-2.8%***
Financial experts on audit committee %$_t$	2642	43.40%	118	70.80%	-27.4%***
CEO ownership$_{t-1}$	2642	0.008	118	0.00374	0.00426***
CFO ownership$_{t-1}$	2642	0.00118	118	0.00037	0.00081**
Board size$_t$	2642	11.98	118	10.44	1.54***
CEO/chairman duality$_t$	2642	0.075	118	0.136	-0.061***

Table 2-4 presents the correlation matrix, which indicates the presence of a woman CFO to be positively correlated with *ln Assets*, *independent directors on BOD %*, *financial experts on audit committee %*, and *CEO/chairman duality*, and negatively correlated with *earnings before LLP*, *CEO ownership*, *CFO ownership*, and *board size.*

Table 2-4 *Correlation matrix*

This table reports the correlation matrix. All variable definitions are available in Appendix A. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

	LLP_t	$Change\ in\ NPL_t$	$Change\ in\ loans_t$	$ln\ Assets_t$	$Earnings\ before\ LLP_t$	$CFO\ gender_t$	$Tier1_{t-1}$	$Independent\ directors\ on\ BOD\ \%_t$	$Financial\ experts\ on\ audit\ committee\ \%_t$	$CEO\ ownership_{t-1}$	$CFO\ ownership_{t-1}$	$Board\ size_t$	$CEO/chairman\ duality_t$
LLP_t	1												
$Change\ in\ NPL_t$	0.296***	1											
$Change\ in\ loans_t$	-0.169***	0.105***	1										
$ln\ Assets_t$	0.108***	-0.017	-0.084***	1									
$Earnings\ before\ LLP_t$	0.226***	0.030	-0.055**	0.239***	1								
$CFO\ gender_t$	-0.007	0.009	-0.003	0.129***	-0.038*	1							
$Tier1_{t-1}$	-0.060	-0.182***	-0.019	-0.189***	0.237***	-0.005	1						
$Independent\ directors\ on\ BOD\ \%_t$	-0.050**	-0.091***	-0.033	0.273***	0.099***	0.049**	0.086***	1					
$Financial\ experts\ on\ audit\ committee\ \%_t$	-0.015	-0.023	0.036	0.269***	0.083***	0.196***	0.033	0.027	1				
$CEO\ ownership_{t-1}$	-0.004	0.050**	-0.004	-0.203***	-0.038*	-0.072***	-0.099***	-0.234***	-0.152***	1			
$CFO\ ownership_{t-1}$	-0.096***	-0.029	0.053**	-0.392***	-0.147***	-0.096**	-0.048*	-0.340***	-0.158***	0.270***	1		
$Board\ size_t$	0.087***	0.079***	-0.003	0.316***	0.062**	-0.127***	-0.205***	0.088***	0.152***	-0.146***	0.236***	1	
$CEO/chairman\ duality_t$	0.042*	0.021	-0.031	0.145***	0.060**	0.045	-0.001	-0.004	0.047*	0.029	-0.012	-0.029	1

4.2. Multivariate analysis

4.2.1 Main models

The results of model (2) are shown in Table 2-5. The coefficient of *change in* NPL_{t+1} captures the extent to which the *expected (forward-looking)* change in NPL is incorporated in LLP, while *change in* NPL_t represents the extent to which the *contemporaneous* change in NPL is incorporated in LLP.

Columns 1 and 3 present the results of the model in which I use bank fixed effects. On the one hand, the coefficient of *change in* NPL_{t+1} is negative, indicating that banks in my sample are more likely to delay incorporating forward-looking information in their LLP. On the other hand, the coefficient of *change in* NPL_t is positive and significant (p-value<0.01) across all columns (with at least a 5% level of significance), suggesting that banks have incorporated contemporary changes in NPL in their reported LLP. Taken together, the results indicate that banks report contemporary, but not forward-looking, information on LLP.

The coefficients on the interactions *CFO gender*$_t$ * *change in* NPL_{t+1} and *CFO gender*$_t$ * *change in* NPL_t capture the incremental effect of women CFOs on the timeliness of LLP reporting. The results indicate women CFOs to be associated with incorporating forward-looking information in their LLP reporting, as shown by the positive coefficient of *CFO gender*$_t$ * *change in* NPL_{t+1}. The coefficient is significant at the 1% significance level. This finding is consistent with the notion of women CFOs being more likely to report more transparently (Barua et al., 2010, Francis et al., 2014, Francis et al., 2015, Liu et al., 2016). In economic terms, for each standard deviation increase in NPL in period *t*+1, women CFOs tend to report $7 million more LLP [4]. I believe that this is significant in economic terms, since the average LLP is $148 million, while the average income before extraordinary item is $195 million. However, the coefficient on *CFO gender*$_t$ * *change in* NPL_t is insignificant, indicating there is no difference between men and women CFOs in terms of the incorporating of contemporary changes in NPL into LLP.

Columns 2 and 4 show the results when applying CEO fixed effects. The results are consistent with those in columns 1 and 3. However, the coefficient on *change in* NPL_{t+1} becomes negative and significant, indicating that men CFOs are more likely to delay LLP recognition

[4] This is calculated as (standard deviation of change in NPL_{t+1} * lagged total loans * the coefficient of the interaction term *CFO gender * change in* NPL_{t+1})=0.0038293*7431.234*0.248.

when there is a change in the CEO. Regarding other control variables, my coefficient on *earnings before LLP* is positive and significant (p-value<0.01), which provides evidence that banks use LLP to smooth their reported income. This is consistent with the findings of of Beatty et al. (1995), Liu and Ryan (2006), and El Sood (2012), among others. However, I find no evidence that banks engage in capital management, as the coefficient on *Tier1* is insignificant. Moreover, *CEO ownership* has a positive and significant association with LLP, indicating that loan risk increases with greater CEO ownership. However, the results show that *CFO ownership* does not affect the level of LLP. Additionally, none of the governance characteristics appear to have a significant effect on the amount of reported LLP, except for *gender diversity %*. This suggests that banks with diverse boards have lower loan risk.

Table 2-5 *Main results*

This table reports the results of the main regressions. Columns 1 and 2 report the results of model 2 but excluding the control variables, while columns 3 and 4 report the results of model 2 including all the control variables. Bank fixed effects are used in the results reported in columns 1 and 3, while CEO fixed effects are used in the results reported in columns 2 and 4. Quarter-year fixed effects are used in all models. All variable definitions are available in Appendix A. The main variables of interests are written in bold. Robust standard errors in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Variable	(1) LLP - Bank fixed effects	(2) LLP - CEO fixed effects	(3) LLP - Bank fixed effects	(4) LLP - CEO fixed effects
Change in NPL_{t+1}	-0.0292	-0.0414*	-0.0417	-0.0553***
	(0.0270)	(0.0221)	(0.0268)	(0.0187)
CFO $gender_t$	-0.00145	-0.00201	-0.00119	-0.00179*
	(0.00109)	(0.00122)	(0.000955)	(0.00101)
CFO $gender_t$ * change in NPL_{t+1}	**0.298*** **	**0.181** **	**0.248*** **	**0.165*** **
	(0.0671)	**(0.0874)**	**(0.0677)**	**(0.0370)**
Change in NPL_t	0.103***	0.0948***	0.0877***	0.0606**
	(0.0321)	(0.0316)	(0.0288)	(0.0278)
CFO $gender_t$ * change in NPL_t	**0.0461**	**0.0103**	**0.0295**	**0.0194**
	(0.0623)	**(0.0492)**	**(0.0349)**	**(0.0437)**
Change in NPL_{t-1}			0.107***	0.103***
			(0.0229)	(0.0239)
Change in NPL_{t-2}			0.0887***	0.0754***
			(0.0207)	(0.0186)
Change in $loans_t$			-0.00145	0.000222
			(0.00174)	(0.00152)
ln Assets $_t$			0.000653	0.000261
			(0.000565)	(0.000590)
Earnings before LLP_t			0.306***	0.287***
			(0.0668)	(0.0704)
$Tier1_{-1}$			-8.03e-05	0.000461
			(0.00629)	(0.00442)

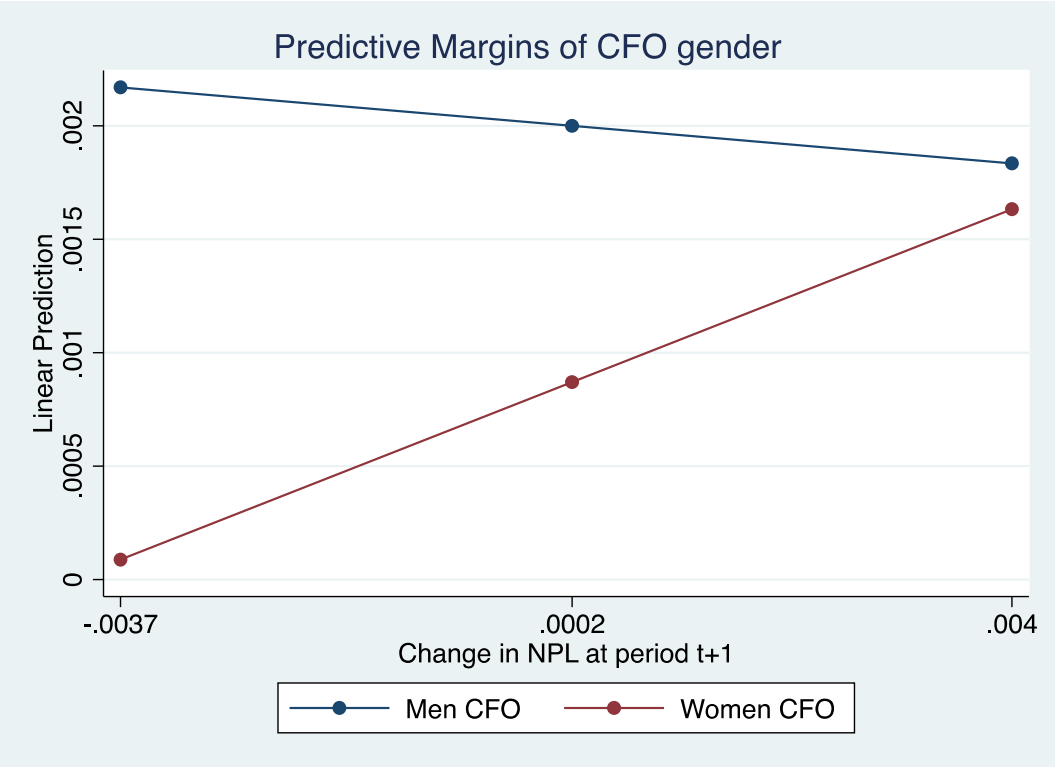
Independent directors on BOD $\%_t$			-0.00105	-0.00111
			(0.00139)	(0.00126)
Financial experts on audit committee $\%_t$			-0.000773	-0.000412
			(0.000485)	(0.000532)
CEO ownership$_{t-1}$			0.0224**	0.0458***
			(0.00992)	(0.0163)
CFO ownership$_{t-1}$			-0.0391	-0.0960
			(0.131)	(0.118)
Board size$_t$			-7.23e-06	-2.46e-05
			(6.19e-05)	(5.55e-05)
CEO/chairman duality$_t$			0.000131	4.94e-05
			(0.000313)	(0.000262)
Gender diversity $\%_t$			-0.0055***	-0.0054***
			(0.00182)	(0.00164)
Constant			-0.00633	-0.00238
			(0.00582)	(0.00589)
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	No	Yes	No
CEO fixed effects	No	Yes	No	Yes
Observations	2,760	2,760	2,759	2,639
R-squared	0.359	0.326	0.458	0.454

Figure 2 compares banks with women CFOs to banks with men CFOs in the timeliness of reporting. Following Holmbeck (2002), I compare the timeliness of LLP reporting at the mean, one standard deviation above the mean, and one standard deviation below the mean of the Change in NPL_{t+1}. The figure suggests that bank with women CFOs report timelier LLP than banks with men CFOs. The slope of women CFOs is positive, suggesting women CFOs report higher LLP with the increase in predicted change in NPL. On the contrary, the slope of men CFOs is negative, suggesting men CFOs report lower LLP with the increase in predicted change in NPL.

Overall, my results suggest that women CFOs are associated with timelier LLP reporting than men CFOs, which is consistent with my hypothesis. While my findings are similar to the literature related to the effect of CFO gender on financial reporting (Barua et al., 2010, Francis et al., 2014, Francis et al., 2015, Liu et al., 2016), this study extends their findings to the banking industry. Moreover, the results of this study extend those of García-Sánchez et al. (2017), and suggest that women CFOs report LLP in a timelier manner than their men counterparts.

Figure 2-1 *Graphical post-hoc probing*

This figure plots the interaction *Change in* NPL_{t+1} * *CFO gender*. The X axis is the *Change in* NPL_{t+1}, while the Y axis is the LLP.



4.2.2 ***Capital constraints***

We follow the banking literature and use Tier 1 capital ratio as a criterion for distinguishing between low-capital and high-capital banks (Ahmed et al., 1999, Pérez et al., 2008, Demirguc-Kunt et al., 2013, Bushman and Williams, 2015, Beatty and Liao, 2014). Among the different types of regulatory capital, Tier 1 is the most prudent. Unlike in the equity ratio, the numerator in the formula for Tier 1 capital ratio has goodwill, intangible assets, and unrealised gains and losses on available-for-sale securities deducted from equity. The reason behind this is that these items might be worthless during periods of financial difficulty (Beatty and Liao, 2014). The denominator of the Tier 1 capital ratio is risk-weighted assets instead of just the book value of total assets. That is, the asset weights in the denominator are adjusted based on riskiness, i.e., less risky assets have lower weights than risky assets. This adjustment leads to banks with risky assets having lower Tier 1 capital ratio than banks with less risky assets, even in cases where both banks have the same capital ratio. I consider banks with Tier 1 capital ratio above 12% to be high-capital banks and banks with Tier 1 capital ratio below 12% to be low-capital banks[5].

[5] I choose 12% as a cut-off point because my sample median Tier 1 capital ratio is 11.98%.

Table 2-6 reports the results of this analysis. For brevity, I only report the results of the specification including bank fixed effects. My main findings remain qualitatively the same when I include CEO fixed effects. Column 1 shows the results using the full sample, while columns 2 and 3 report the results when I split my full sample into two groups: (1) high-capital banks and (2) low-capital banks. To capture the effect of bank capital I introduce the variable *strong*, which takes the value of one if the bank is highly capitalised (Tier 1 capital ratio higher than 12%) and zero otherwise. Then, I interact the variable *strong* with my main interactions CFO gender * Change in NPL_{t+1} and CFO gender * Change in NPL_t.

The results reported in column 1 support my main analysis and show that my main interaction *CFO gender * change in* NPL_{t+1} remains significant at the 1% level, indicating that women CFOs report timelier LLP than men CFOs, regardless of the level of Tier 1 capital ratio. The coefficient on the interaction *CFO gender * change in* NPL_{t+1} ** Strong* is insignificant, indicating that there is no difference between the two groups regarding LLP timeliness. Columns 2 and 3 report the results for the high and low regulatory capital subsamples, respectively. The results also support my main findings, indicating that women CFOs are associated with timelier LLP reporting in both groups. The coefficient on *CFO gender * change in* NPL_{t+1} is positive and significant in both subsamples. In addition, the results of the subsample analysis indicate that women CFOs in high regulatory capital banks report timelier LLP (coefficient=0.476) than women CFOs in low regulatory capital banks (coefficient=0.255), which is consistent with risky banks tending to use aggressive accounting policies (Beatty et al., 2002). In untabulated analysis, I use different capital definitions to differentiate between high- and low-capital banks and my conclusion remains the same[6].

We also contend that the results reported in Table 2-6 attenuate the possibility that self-selection bias drives my results in my main analysis. It is plausible that women CFOs are not randomly selected into banks. Risky banks might avoid appointing women to the top positions; hence, the relationship that I observe in my main analysis could be biased, with risky firms tending to appoint men CFOs and use aggressive accounting methods. However, by using bank capital as a criterion for distinguishing risk-taking banks from risk-averse banks, I am able to lessen the risk of selection bias.

Overall, the findings of this section confirm that women CFOs are more ethical and more risk-averse than their men counterparts. I show that women CFOs are associated with timelier LLP

[6] Specifically, I use the equity-to-assets ratio and total regulatory capital (Tier 1 capital ratio + Tier 2 capital ratio).

reporting, even for banks under increased pressure to delay LLP recognition. However, it seems that capital constraints moderate this relationship.

Table 2-6 *Comparison between banks with high regulatory capital and banks with low regulatory capital*

This table presents the results of the comparison in LLP timeliness between banks with high regulatory capital and banks with low regulatory capital. Column 1 reports the results for the full sample. Column 2 reports the results for the low regulatory capital subsample while column 3 represents the results for the high regulatory capital subsample. I use 12% as a cut-off point based on my sample median. (Note: the median of regulatory capital in my sample is 11.98%. I rounded it for simplicity. All variables are explained in Appendix A . The main variables of interest are written in bold. For brevity, I do not report the results of the control variables. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all the models. In untabulated results, I use 11%, 10%, and 9% as cut-off points and my main conclusion does not change. The results hold when I use CEO fixed effects. For brevity, I report only the results of the bank fixed effects models. Robust standard errors in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Variables	(1) Full sample	(2) Banks with Tier 1 capital ratio <12%	(3) Banks with Tier 1 capital ratio >12%
Change in NPL_{t+1}	-0.0849***	-0.0557**	-0.0665**
	(0.0273)	(0.0264)	(0.0267)
CFO $gender_t$	-0.00127	-0.00115*	-0.000803
	(0.000972)	(0.000611)	(0.00148)
CFO $gender_t$ * change in NPL_{t+1}	**0.284*** **	**0.255** **	**0.476*** **
	(0.107)	**(0.108)**	**(0.106)**
CFO $gender_t$ * change in NPL_{t+1} * $strong_t$	**0.0104**		
	(0.110)		
Change in NPL_t	0.0963**	0.137***	0.0503
	(0.0390)	(0.0479)	(0.0367)
CFO $gender_t$ * change in NPL_t	**-0.0689**	**-0.0498**	**0.0740**
	(0.0651)	**(0.0749)**	**(0.0491)**
CFO $gender_t$ * change in NPL_t * $strong_t$	**0.145**		
	(0.0954)		
Other interactions	Yes	-	-
Other controls	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes
Observations	2,759	1,415	1,344
R-squared	0.460	0.498	0.489

5. Endogeneity and Further Robustness tests

5.1. Diff-in-diff Analysis: CFO transition

To better establish a causal link between the CFO's gender and the timeliness of LLP reporting, and considering the challenge of finding a truly exogenous instrument, I use CFO transition as a quasi-natural experiment. If the hypothesis that women CFOs are likely to report timelier LLP holds, I should observe an improvement in the timeliness of LLP reporting following the replacement of a man with a woman CFO. I follow Huang and Kisgen (2013) and apply a difference-in-differences framework. Specifically, I use man-followed-by-woman (MFW) CFO transition banks as my treated group and man-followed-by-man (MFM) CFO transition banks as my control group. To exclude interim CFOs from my analysis, I require that the new CFO stays in the position for more than one year before including them in my treatment or control sample. To support my hypothesis, I should observe that banks with MFW CFO transitions experience higher transparency following the event, while a similar change should not be observed for the banks with MFM CFO transitions. To capture this effect, I introduce the variables *post* and *treated* to the model. *Post* is a dummy variable that takes the value one for the post-CFO transition period and zero otherwise; *treated* is a dummy variable that takes the value one if a bank experiences a MFW CFO transition and zero otherwise. Finally, I interact these two variables (*post* and *treated*) with *change in* NPL_{t+1} and *change in* NPL_t to capture the marginal effect of appointing women CFOs following men CFOs on the timeliness of LLP.

$$LLP_{it} = \beta_0 post_{it} + \beta_1 post_{it} * treated_i + \beta_2 post_{it} * change\ in\ NPA_{it+1} + \beta_3 post_{it} * change\ in\ NPA_{it} + \beta_4 post_{it} * treated_i * change\ in\ NPA_{it+1} + \beta_5 post_{it} * treated_i * change\ in\ NPA_{it} + \sum other\ interactions + \sum controls + fixed\ effects + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

The coefficients of the interactions *post* * *change in* NPL_{t+1} and *post* * *change in* NPL_t capture the effect of the newly appointed *man* CFO on LLP timeliness for MFM banks, while the coefficients of the interactions *post* * *treated* * *change in* NPL_{t+1} and *post* * *treated* * *change in* NPL_t capture the effect of the newly appointed *woman* CFO on LLP timeliness for MFW banks. I do not expect incoming *man* CFOs to be associated with a change in the timeliness of LLP reporting. On the other hand, I expect newly appointed *woman* CFOs in MFW banks to be associated with an improvement in the timeliness of LLP recognition. Therefore, positive and significant coefficients are expected for *post* * *treated* * *change in* NPL_{t+1} and *post* * *treated* * *change in* NPL_t.

The results of this test are reported in Panel A of Table 2-7. Banks having an MFW CFO transition report timelier LLP following the transitions compared to the control group (MFM banks). On the other hand, the results show that firms in the control group (MFM banks), as indicated by the coefficients of the interactions *post * change in* NPL_{t+1} and *post * change in* NPL_t, do not experience an improvement in the timeliness of their LLP reporting. The results remain the same when I use CEO fixed effects (column 2). I argue that CEO fixed effects also control for the cultural change associated with a CEO replacement.

Further, to mitigate serial correlation bias from the difference-in-differences method (Bertrand et al., 2004), I perform an additional test where I restrict my sample to a maximum of three years before and three years after transition. The results of this test are reported in Panel B of Table 2-7. My conclusion remains the same.

A limitation of the transition-related analysis is that the new CFO appointment and replacement decision could be endogenous. For instance, firms with a risk-taking culture are likely to appoint CFOs with risk-taking behaviour and vice versa. In my context, when a bank decides to adopt a more risk-taking strategy, it is more likely to replace its current risk-averse CFO with a risk-taking CFO and vice versa. To further control for this issue, I limit my analysis to cases of voluntary CFO turnover. Such turnover would suggest that CFO replacement has not occurred due to a change in strategy. This specification also allows me to further mitigate any self-selection biases. Following prior literature on executive turnover (Parrino et al., 2003, Naveen, 2006, Gao et al., 2017), I consider CFO transition as voluntary if the replaced CFO is (1) voluntarily retired, (2) promoted to CEO or chairman of the board, (3) placed in a different position (but with the same rank) in the same bank (e.g., they become chief operating officer), or (4) leaves the bank to work in a higher-ranked position at another firm. I follow Gao et al. (2017) and consider the CFOs voluntarily retired if their age is above 60 and announce their retirement at least six months in advance. In total, I identify 23 transitions as voluntary, while 12 transitions are identified as forced. Panel E of Table 2-7 details the type of transition. The results of this analysis are consistent with my previous findings (reported in Panels C and D). I note that the interaction term when using bank fixed effects in Panel C, column 5 is marginally statistically insignificant (but positive) and becomes statistically significant when I restrict the sample to three years before and after the CFO transition (column 7).

Finally, I remove observations from the first year of the new CFO's tenure. Newly appointed CFOs might bring significant changes in their first year. Hence, removing first-year observations improves the robustness of my findings. Panel F of Table 2-7 reports the results of this model specification. The results are similar to those reported earlier in Table 2-7.

Table 2-7 *CFO-transition analysis*

This table shows the results of my difference-in-differences analysis. Panel A reports the results of the full sample of man-followed-by-woman (MFW) and man-followed-by-man (MFM) banks. I exclude observations where the new CFO stayed in their position for one year or less. Panel B reports the results when I restrict the sample to three years before transition and three years after transition. Panels C and D repeat the analysis presented in panels A and B, respectively, limiting the observations to voluntary CFO transitions only. Panel E details the reasons for CFO transitions. Finally, Panel F repeats the analysis in panels A-D but after removing the first-year observations of newly appointed CFOs. Columns 1, 3, and 5 show the results of the bank fixed effects model while columns 2, 4, and 6 show the results of the CEO fixed effects model. My treated group is MFW CFO transition banks while my control group is banks with MFM CFO transitions. All variables are explained in Appendix A . The variables of interest are written in bold. For brevity, I do not report the results of the control variables. Quarter-year fixed effects, and all control variables are included in all models. Robust standard errors in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

	Panel (A) Full sample		Panel (B) Restricted sample		Panel (C) Voluntary turnover – full sample		Panel (D) Voluntary turnover – restricted sample	
Variables	(1) Bank fixed effects	(2) CEO fixed effects	(3) Bank fixed effects	(4) CEO fixed effects	(5) Bank fixed effects	(6) CEO fixed effects	(7) Bank fixed effects	(8) CEO fixed effects
Post * change in NPL_{t+1}	-0.0866	-0.0919	-0.0327	-0.0770	-0.0300	-0.0280	0.00705	-0.0494
	(0.0614)	(0.0604)	(0.0792)	(0.0900)	(0.0764)	(0.0734)	(0.0708)	(0.100)
Post * treated * change in NPL_{t+1}	**0.258****	**0.280*****	**0.537*****	**0.629*****	**0.131**	**0.194***	**0.351****	**0.399****
	(0.0985)	**(0.101)**	**(0.168)**	**(0.165)**	**(0.115)**	**(0.110)**	**(0.133)**	**(0.149)**
Post * change in NPL_t	-0.0439	0.0338	-0.0245	0.122	-0.0989	0.0205	-0.186**	-0.00904
	(0.0667)	(0.0679)	(0.120)	(0.130)	(0.0753)	(0.0658)	(0.0831)	(0.0894)
Post * treated * change in NPL_t	**0.460*****	**0.338****	**0.708*****	**0.571****	**0.624*****	**0.412****	**0.725*****	**0.554*****
	(0.133)	**(0.143)**	**(0.225)**	**(0.222)**	**(0.167)**	**(0.169)**	**(0.234)**	**(0.153)**
Other interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
CEO fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,050	987	647	600	681	636	443	406
R-squared	0.605	0.560	0.586	0.542	0.621	0.561	0.665	0.636

Panel E: CFO-transition identification

Transition reason	**Frequency**
Voluntary retirement	3
Promoted to a higher position	10
Moved to a higher position in another firm	3
Placed in a different position (but with the same rank) in the same bank	7
Total voluntary turnover	*23*
Forced turnover	*12*
Total number of transitions	***35***

Panel F: Results after removing first-year observations of newly appointed CFOs

Variables	(1) Full sample	(2) Full sample	(3) Restricted sample	(4) Restricted sample	(5) Full sample - voluntary turnover	(6) Full sample - voluntary turnover	(7) Voluntary turnover- restricted sample	(8) Voluntary turnover - restricted sample
Post * treated * change in NPL_{t+1}	**0.209***	**0.224***	**0.268***	**0.233**	**0.300***	**0.332***	**0.637****	**0.678****
	(0.110)	**(0.113)**	**(0.156)**	**(0.152)**	**(0.163)**	**(0.168)**	**(0.261)**	**(0.295)**
Post * treated * change in NPL_t	**0.466*****	**0.481*****	**0.624*****	**0.615*****	**0.861*****	**0.904*****	**0.866****	**0.998****
	(0.161)	**(0.160)**	**(0.227)**	**(0.219)**	**(0.227)**	**(0.263)**	**(0.345)**	**(0.357)**
Constant	-0.00153	0.00392	-0.00349	0.00599	-0.0226***	-0.0231**	**-0.0298****	**-0.0340*****
	(0.0112)	(0.0132)	(0.0166)	(0.0214)	(0.00711)	(0.00896)	**(0.0115)**	**(0.00975)**
Other interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
CEO fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	874	874	573	573	600	600	400	400
R-squared	0.596	0.548	0.609	0.534	0.597	0.532	0.695	0.586

5.2. Financial expertise of the board of directors

It could be argued that the financial expertise of the board of directors (or the lack of it) is a driver for my results. The descriptive statistics show that banks with women CFOs have, on average, more financial experts on their audit committee. It is therefore plausible that it is the financial expertise of the audit committee in banks with women CFOs that improves LLP timeliness and not the gender of the CFO per se. That can be explained by the fact that financial experts on audit committees are expected to be in a better position to question the management over their accounting choices (Badolato et al., 2014).

We directly control for the effect of the presence of financial experts on LLP timeliness by interacting the financial expertise variable with the change in NPL variables (*change in* NPL_{t+1} and *change in* NPL_t). In addition, this specification allows me to find the incremental effect of CFO gender on LLP timeliness over and above the effect of the board's financial expertise. To support my hypothesis, I need a positive and significant effect of the interaction *CFO gender * change in* NPL_{t+1}. The results are reported in column 1 of Table 2-8 and are consistent with my prediction. The coefficient of the interactive term is positive and significant at the 1% level. Interestingly, I do not observe any significant influence of the audit committee's financial expertise on the timeliness of the LLP. I also repeat the same analysis using the financial expertise of the board of directors, instead of the audit committee's, and arrive at the same conclusion.

5.3. Gender diversity of the board of directors

We also compare the effect of women CFOs on the timeliness of LLP with the effect of the board of directors' overall gender diversity. The descriptive statistics show that women CFOs are more likely to be appointed in banks with a more gender-diverse board of directors. García-Sánchez et al. (2017) show how the gender diversity of the board affects the timeliness of the LLP reporting. Therefore, I explicitly control for this by interacting the board's *gender diversity %* with *change in* NPL_{t+1} and *change in* NPL_t to rule out the possibility that the gender diversity of the board drives my results and not the gender of the CFO. The results reported in Table 2-8 show that my main interaction remains significant at the 1% level and that the interaction *(gender diversity % * change in* NPL_{t+1}*)* is significant but only at the 10% level. This finding supports my hypothesis that women CFOs have a direct effect on LLP timeliness. It also suggests that the effect of the CFO's gender is stronger than and incremental over the effect of the gender diversity of the independent board members. I also use different variants of gender diversity controls that might affect the banks' financial reporting decisions,

such as the gender diversity of the audit committee and gender diversity of the financial experts on the board of directors (untabulated results). My conclusion remains unchanged.

Table 2-8 *Other robustness tests*

This table reports the results of the other robustness checks I performed. The column title reports the governance characteristic the model uses. Governance characteristics used are *financial experts on audit committee %* and *gender diversity %* . All variables are defined in Appendix A. For brevity, I report variables of interest only. Columns 1 and 3 report the results excluding the control variables. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all models. The results hold when I use CEO fixed effects. For brevity, I report only the results of the bank fixed effects models. The variables of interests are written in bold. Robust standard errors in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively

Variables	(1)	(2)	(3)	(4)
	Financial experts on audit committee %		Gender diversity %	
CFO gender$_t$ * change in NPL$_{t+1}$	**0.254*** **	**0.234*** **	**0.273*** **	**0.247*** **
	(0.0874)	**(0.0651)**	**(0.0558)**	**(0.0850)**
CFO gender$_t$ * change in NPL$_t$	**0.0376**	**0.00239**	**0.00331**	**0.0307**
	(0.0585)	**(0.0580)**	**(0.0713)**	**(0.0337)**
Financial experts on audit committee %$_t$	-0.000736	-0.000784		
	(0.000592)	(0.000484)		
Financial experts on audit committee %$_t$ * change in NPL$_{t+1}$	0.0483	0.0340		
	(0.0711)	(0.0610)		
Financial experts on audit committee %$_t$ * change in NPL$_t$	0.0721	0.0495		
	(0.110)	(0.0954)		
Gender diversity %$_t$			-0.00658***	-0.00521***
			(0.00227)	(0.00183)
Gender diversity %$_t$ * change in NPL$_{t+1}$			0.675	0.733*
			(0.454)	(0.440)
Gender diversity %$_t$ * change in NPL$_t$			0.378	0.286
			(0.364)	(0.323)
Other controls	No	Yes	No	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	2,760	2,759	2,760	2,759
R-squared	0.361	0.458	0.375	0.466

5.4. Other sensitivity tests

We conduct several untabulated sensitivity tests to ensure robustness of my findings. I use other proxies to control for board of director characteristics that could impact on financial

reporting decision-making, as documented in previous literature. These include the percentage of financial experts on the board of directors, percentage of women directors on the audit committee, size of the audit committee, and percentages of women with financial expertise on the board of directors and audit committee. Although I control for bank risk by using bank size and Tier 1 regulatory capital in my main model, I also use leverage, consistent with some previous studies. I use executive compensation as another proxy for managerial incentives to manage earnings. Also, I control for the gender of the CEO. Finally, I replace my fixed effects estimator with OLS and random effects estimators. My findings remain qualitatively the same after these changes to my model specifications.

6. Conclusion

This study examines whether gender differences of CFOs affect the timeliness of the LLP reporting in banks. I address this research question by analysing a panel dataset of US banks listed on the S&P 1500 between 2007 and 2016.

My findings suggest that women CFOs report timelier LLP than men CFOs. I provide evidence that firms with women CFOs recognise expected changes in NPL in contemporary LLP. Moreover, I find that both men and women CFOs incorporate contemporary changes in NPL information in LLP. I include bank, CEO, and time fixed effects to mitigate concerns related to omitted variable biases. My findings are robust to various model specifications. Consistent with my main findings, I find that women CFOs are associated with timelier LLP reporting even in low-capital banks, although my findings suggest that, in banks with capital constraints, this relationship becomes weaker.

In an additional analysis, I show evidence that banks with an MFW CFO transition improve their LLP timeliness post-transition. Taken together, the results suggest that women CFOs are associated with an improved information content regarding LLP reporting, which is consistent with the literature suggesting that women have more ethical standards (Weeks et al., 1999, Vermeir and Van Kenhove, 2008) and are more risk-averse than men (Huang and Kisgen, 2013, Palvia et al., 2015).

This study contributes to my understanding of the role of gender in enhancing bank financial reporting transparency, which improves the external disciplining of banks over risk-taking. It shows that women CFOs are associated with improved transparency of bank financial reporting, which is considered to be rather opaque (Beatty and Liao, 2014, Acharya and Ryan, 2016). This study also contributes to the literature related to LLP reporting by showing that the CFO's gender affects the way that LLPs are recognised. Despite the vast literature on LLP

reporting, little is known about the factors driving its timeliness (Beatty and Liao, 2014, Bushman, 2014). I show that CFO traits, such as gender, significantly affect LLP reporting decisions. Practically, my findings inform the debate on the implementation of the new expected-loss LLP standard (Beck and Narayanamoorthy, 2013, Norden and Stoian, 2014, Curcio and Hasan, 2015, Cohen and Edwards, 2017), as well as that on advancing board of director quotas based on gender (Van Staveren, 2014, Palvia et al., 2015, Adams and Ragunathan, 2017).

My study is not without limitations. I believe that the small number of women CFOs reduces the statistical power of my tests, an inherent problem in most gender studies in a corporate setting. In addition, the data availability restricts me to working only with banks included in the S&P 1500, potentially limiting the generalisability of my findings to large listed banks. I urge future research to shed more light on smaller firms, as most of the gender studies available focus on large firms. Besides this, gender studies state that two channels guide women to be associated with higher financial reporting quality: (1) they are more risk-averse and (2) they hold higher ethical standards. However, it is unclear whether the results I observe are derived through both channels or one of them. Thus, I urge future studies to give more attention to what truly drives women to be associated with earnings of higher quality.

Chapter 3: Does the ethnic diversity of the board affect the timeliness of loan loss provision reporting in banks?

Abstract

We investigate the effect of board ethnic diversity on the timeliness of loan loss provision (LLP) in banks. My findings indicate that ethnically diverse boards are associated with timelier provision reporting, suggesting an improved monitoring function of such boards. I also find that diverse boards are only associated with timelier LLP reporting in banks with high default risk, throughout my sample period, indicating that diverse boards become more risk averse during periods of financial distress. My results remain robust after controlling for various board-level characteristics, CEO-specific controls, bank and CEO fixed effects, and the quality of the information environment of the bank. To address endogeneity concerns related to self-selection biases, I use propensity score matching to create a matched sample, with my main results remaining unchanged. In an extended analysis, my evidence suggests that an excessive increase in ethnic groups in the board creates conflicts, cancelling out the benefits of diversity. In light of the lately increased levels of ethnic diversity in banks' boards, my study adds to the scarce existing literature on the effect of board diversity on banks' decision-making processes.

1. Introduction

Traditionally, ethnically Caucasian directors have dominated the boards of the largest firms in the United States (US), with little room for ethnic minorities. However, recent statistics show a steady increase in ethnic minorities' representation on these boards. For instance, the proportion of directors from ethnic minorities in Fortune 500 firms increased from 12.7% in 2010 to 16.2% in 2018 (Deloitte, 2018). In the same vein, according to Institutional Shareholder Services (2019), non-Caucasian directors formed 21% of new director appointments in 2019, compared to only 12% in 2009. Interestingly, to date, studies exploring the effect of such changes on boards still remain scant.

The association between ethnicity and decision making, at the *individual level*, has been substantially investigated in the psychology and economics literature (Cox et al., 1991, McLeod et al., 1996, Brown, 2007). However, ethnicity studies at the *corporate level*, especially for banks, are still limited. This paper aims to extend this line of research by investigating the effect of the presence of non-Caucasian independent directors on earnings quality in banks. Only a few papers focus on the ethnic diversity of banks' boards (García-Meca et al., 2015, Guest, 2019), offering insights on the effect of the recent increase in non-Caucasian directors in banks[7]. This renders my analysis particularly important, since untimely LLP reporting has been identified as a major source of the banking failures that occurred

[7] For instance, in my sample, I notice an increase in ethnic minorities on banks' boards from 1% in 1996 to more than 10% in 2017.

during the 2007-09 financial crisis (Barth and Landsman, 2010, Beatty and Liao, 2011, Jin et al., 2018).

Due to its significance in bank accounting, many studies on bank financial reporting quality focus solely on LLP reporting (see, e.g, Kanagaretnam et al. (2014), Kanagaretnam et al. (2004), Kanagaretnam et al. (2003), Bushman and Williams (2012), Bushman and Williams (2015), Bushman (2016)). LLP is the largest bank accrual and an important indicator of banks' loan portfolio risk (Beatty and Liao, 2014). LLP also manifests information asymmetries between executives and stakeholders in the banking industry (Nichols et al., 2009). The estimation of LLP is dependent on private information about the riskiness of the bank's loan portfolio, which is not publicly available. Effective boards should thus ensure that executives do not exploit that information advantage for their private benefit (Fama and Jensen, 1983, Cornelli et al., 2013, Ryan Jr and Wiggins III, 2004, Peasnell et al., 2005).

Aiming at improving board effectiveness, academics and regulators have turned their attention to the extent of diversity in the boardroom (Miller and del Carmen Triana, 2009, García-Meca et al., 2015, Adams et al., 2015, Sila et al., 2016). More specific to banking, the Basel Committee on Banking Supervision (2015) explicitly specifies that the complex nature of banking operations implies that their boards should be comprised of a diverse set of directors. However, it seems that gender diversity on boards has attracted the most attention from academics (Gull et al., 2018, Sila et al., 2016, Adams and Ferreira, 2009), while studies investigating other forms of diversity are rather scarce.

In addition, recent literature on diversity focuses almost solely on the effect of diversity at the board level, whereas only a few studies investigate the effect of diversity at the committee level (Guest, 2019, Zalata et al., 2018b). Board committees conduct most of the board functions. The audit committee, for instance, is responsible for monitoring financial reporting quality. According to the Securities and Exchange Commission (2019), "Independent audit committees perform a vital role in financial reporting and have a significant oversight responsibility in connection with the preparation and review of the financial information my investors and markets expect" . Given its importance for overseeing financial reporting processes, I extend my analysis to include diversity in the audit committee.

We argue that non-Caucasian independent directors, at the board and committee levels, can play a substantial role in improving LLP reporting and the timeliness of its recognition[8]. I develop my hypotheses based on arguments derived from previous studies. First, non-

[8] LLP reporting is considered timely when it reflects the current and future changes in non-performing loans.

Caucasian directors appear not to be part of the 'old boys club' and are thus perceived to be more independent (Hillman et al., 2002, Zweigenhaft and Domhoff, 2006, Broome et al., 2010, Carter et al., 2003, Ntim, 2015). That is because directors of all-Caucasian boards have stronger social ties among themselves (including the executives), which might affect board independence. Thus, non-Caucasian directors are expected to be more independent and hence decrease agency costs associated with delaying LLP recognition. Second, resource dependence theory suggests that diverse boards increase the knowledge base in the boardroom and thus improve the board's competence at monitoring (McLeod et al., 1996, Miller and del Carmen Triana, 2009, Watson et al., 1993). Similarities among board members are expected to result in a harmony of views. However, different backgrounds and experiences introduced to the board by non-Caucasian directors are likely to increase the cognitive differences between board members, resulting in the discussion of more ideas. Eventually, such discussions may enhance the monitoring performance of the board and thus improve LLP timeliness. Finally, it is plausible to assume that ethnic minorities are exposed to social discrimination, which might affect their risk tolerance. (Bonaparte et al., 2017) suggest that minorities overestimate their exposure to risks and hence are more risk averse than the majority. The risk-averse nature of non-Caucasian independent directors also puts more pressure on them to protect their reputation in the market for directors. Thus, I conjecture that this risk aversion manifests itself on boards by leading managers to take conservative decisions such as reporting timelier LLP.

Furthermore, since the board delegates to the audit committee the monitoring of financial reporting decisions, I would expect the diversity of the audit committee to play a major role in the timeliness of LLP recognition. External stakeholders anticipate that the audit committee will dedicate time and effort to monitoring managers' reporting choices (Klein, 2002). In addition, since the audit committee has access to banks' internal information, it is also expected to challenge managers and approve or refuse their judgments (Badolato et al., 2014).

We further extend my analysis to incorporate the impact of risk. Since non-Caucasian independent directors are more risk averse, I hypothesise that such risk aversion will be more prevalent in periods of increased default risk. Prior studies show that banks in financial distress need to take more conservative decisions. Ahmed and Duellman (2011) show that, during periods of increased risk, conservatism results in improved firm performance. More specific to the banking industry, Akins et al. (2017) show that LLP timeliness results in improvements in loan quality. They argue that timeliness of LLP leads to the earlier discovery of bad loans, and hence facilitates corrective action. Therefore, I examine how default risk moderates the relationship between the ethnic diversity of the board and the timeliness of LLP.

My findings overall confirm my hypotheses and suggest that board (audit committee) ethnic diversity influences its effectiveness, especially during times of financial distress. In particular, I find that ethnically diverse boards of US banks are associated with timelier LLP reporting during the 1996–2017 period. In addition, as hypothesised, I find that such an association is more pronounced in banks with higher default risk. I also find that banks with diverse boards had a higher propensity to report timelier LLP during the 2007-09 financial crisis – especially banks with low regulatory capital (hereafter, 'weak banks'). My findings indicate that board diversity takes on greater importance during periods of financial distress.

Empirical and theoretical literature suggests that board structure is endogenously determined (for a survey, see (Adams et al., 2010)). Therefore, I run several tests to address such endogeneity concerns. First, I employ bank fixed effects to control for omitted variables related to time-invariant characteristics. Utilising bank fixed effects allows my model to account for bank-specific unobservable characteristics, such as culture. Second, because CEOs have a significant effect on their firms' financial reporting decisions (Clinch and Magliolo, 1993, Gaver and Gaver, 1998, Abdel-Khalik, 2007, Hazarika et al., 2012, Lin et al., 2014, Ali and Zhang, 2015, Manchiraju et al., 2016), I control for CEO characteristics to alleviate concerns that my results are biased due to omitted variables related to such characteristics. Specifically, I implement CEO compensation, CEO age, and CEO gender as CEO-level controls. I also employ CEO fixed effects to control for time-invariant characteristics related to the CEOs. Third, to further address potential self-selection bias, I apply a propensity score matching framework where I match each firm with a diverse audit committee to another firm with a non-diverse audit committee based on a number of observable variables. Fourth, I control for various board- and bank-level characteristics, such as financial expertise and whether the board has a risk committee. Finally, I use analyst following and analyst forecast error as controls for the quality of the information environment of the firm. My results hold under all these model specifications.

Finally, I investigate whether an increase in the number of ethnic groups on the board is beneficial to the firm or not. My evidence suggests that the relationship is concave. The findings show that boards (audit committees) with three (two) ethnic groups are associated with timelier LLP than banks with homogeneous boards. This finding suggests that diversity improves board effectiveness. However, I do not find such evidence in boards including four or more ethnic groups, which implies that potential conflict arising from greater diversity cancels out the beneficial effect of diversity in opinions.

Existing studies most relevant to mine include those of Guest (2019) and Lourie et al. (2018). Guest (2019) examines the effect of the board's ethnicity on its monitoring role, while Lourie

et al. (2018) investigate the effect of chief financial officer (CFO) ethnicity on corporate financial reporting. My study differs extensively from these two studies in the following ways. First, mine investigates the effect of the ethnic diversity of the *board* on financial reporting decisions, rather than that of the *CFO*. Second, unlike Guest (2019) and Lourie et al. (2018), my study is limited to the banking industry. Restricting my investigation to the banking industry renders my study less affected by omitted variable biases related to other industries and different regulations (Kanagaretnam et al., 2011, Tran et al., 2019b).

We contribute to the literature in several ways. First, my study is among the first to provide evidence on the association between a board's ethnic diversity and financial reporting quality. Most previous studies either investigate the association between *gender* diversity and financial reporting quality (Adams et al., 2015, Hillman, 2015), or the effect of ethnicity on firm performance (Carter et al., 2003, Carter et al., 2010, García-Meca et al., 2015, Ntim, 2015). With the exception of Guest (2019), no previous study investigates the relationship between boards' ethnic diversity and financial reporting quality. Furthermore, to the best of my knowledge, my study is the first to demonstrate that board diversity becomes more beneficial during turbulent periods, and I specifically illustrate that banks with diverse boards report more conservatively than those with homogeneous boards as default risk increases or a financial crisis occurs.

Second, my study contributes to the bank accounting literature by indicating that a bank board's ethnic diversity affects the bank's reporting transparency. Although banks have a significant impact on my economy, merely a few studies investigate the effect of banks' boards' diversity on their decision-making process (Berger et al., 2014, Hagendorff and Keasey, 2012, García-Sánchez et al., 2017, García-Meca et al., 2015). In addition, although many LLP-related studies focus on the economic consequences of LLP reporting for banks (Bushman and Williams, 2012, Akins et al., 2017, Bikker and Metzemakers, 2005, Fillat and Montoriol-Garriga, 2010, Olszak et al., 2017, Jin et al., 2018), only a few investigate the reasons behind heterogeneity in LLP reporting in the first place. Hence, my study provides constructive evidence that adds to this stream of literature.

Finally, I contribute to the literature that explores how cultural influences of executives and directors affect firms' decisions (Kanagaretnam et al., 2014, Kim et al., 2017, Merkley et al., 2019, Brochet et al., 2019). Previous studies investigate the effect of directors' (or executives') culture on firm decisions at a cross-country (Kanagaretnam et al., 2011, Kanagaretnam et al., 2014) or cross-industry (Brochet et al., 2019, Kim et al., 2017) level, while my study specifically holds that cultural differences persist even within the same country and industry.

The remainder of this study is organised as follows. Section 2 discusses relevant prior studies and presents my hypotheses. Section 3 describes my methodology, and Section 4 discusses my results. Finally, I conclude in Section 5.

2. Literature review and hypotheses' development

2.1. LLP and bank risk

LLP is the largest and most important bank accrual. It refers to the estimated losses from banks' most important business activity, lending. Consequently, its reporting has a significant effect on banks' performance. The findings of the LLP-related literature link conservative LLP reporting with a decrease in bank risks. For instance, Jin et al. (2018) find that banks reporting lower LLP before the financial crisis had a higher likelihood of failure during the crisis. Also, Bushman and Williams (2012) show that banks reporting timelier LLP have higher external discipline over risk taking, whereas Bushman and Williams (2015) illustrate that timelier LLP reporting is associated with lower systematic risk and lower financing risk.

In the same manner, Beatty and Liao (2011) show that banks with timelier LLP reporting were more capable of issuing new loans during the financial crisis and performed better. Consistent with this finding, Akins et al. (2017) highlight that banks reporting LLP in a timelier manner have better-quality loan portfolios, because timelier recognition of LLP leads banks to take corrective actions earlier and, as a result, have more chance of improving loan quality.

Other studies also suggest that the corporate culture towards risks affects LLP timeliness. For example, Kanagaretnam et al. (2014) show that countries with an *uncertainty avoidance* culture are associated with conservative LLP reporting, whereas Black and Gallemore (2013) find that banks with overconfident CFOs tend to delay LLP recognition. Furthermore, García-Sánchez et al. (2017) show that gender-diverse boards, which are perceived to decrease firm risk (see, e.g, Gul et al. (2013), Sila et al. (2016), Gull et al. (2018), Wahid (2018)), are associated with timelier LLP reporting.

Although many studies investigate the consequences of LLP reporting for bank performance, only a few investigate the determinants of LLP reporting (Nicoletti, 2018). Also, despite the increase in ethnic diversity on banks' boards, to the best of my knowledge, no study investigates the effect of ethnic diversity on the LLP reporting behaviour of banks. In the next sections, I review the literature relating to board ethnic diversity and firm decisions.

2.2. Ethnic diversity and board performance

The use of different theories gives different predictions on the effect of diversity on board effectiveness. Agency theory (Carter et al., 2003), resource dependence theory (Hillman et al., 2007), and discrimination theory (Bonaparte et al., 2017) predict a positive effect, while both social psychology theory (Westphal and Milton, 2000) and implicit quota theory (Ferreira, 2010) predict that board diversity has a destructive effect. Moreover, self-selection theory (Broome et al., 2011) and tokenism theory (Kanter, 1987) predict that board diversity has 'no effect' on board effectiveness.

Agency theory suggests that increasing the diversity of the board leads to an increase in board performance through improved board independence (Carter et al., 2003, Ntim, 2015). It is perceived that diversity increases board independence for a number of reasons. First, based on the similarity attraction paradigm (Byrne, 1971, Riordan and Shore, 1997, Kunze et al., 2011), individuals are more likely to establish social bonds with other individuals with similar demographic characteristics. Thus, directors and managers of the same ethnicity are expected to establish social bonds with each other, which might eventually undermine directors' independence in monitoring managers. Hence, directors from ethnic minorities are more prone to challenge managers and other directors over their decisions. The view that board ethnic diversity increases board independence is further supported by the findings of Broome et al. (2010), who show that directors from minority ethnic groups have weak social relationships with Caucasian executives. Second, being members of a discriminated-against group in society could cause directors from ethnic minorities to be more sensitive towards inequity and thus motivate them to clamp down on agency-related issues (Guest, 2019).

Third, board diversity leads to a greater knowledge base, resulting in improved board performance (Watson et al., 1993). It is anticipated that directors from different backgrounds will bring different experiences to the board. Thus, since the board will be exposed to different opinions, it is more likely to be more informed and hence arrive at better decisions. Bantel (1993) investigates the effect of board cultural diversity on strategic clarity in banks and finds that such diversity leads to improved strategic decision making. Consistent with this view, McLeod et al. (1996) perform an experimental study comparing performance at a brainstorming task between an Anglo-American group and an ethnically diverse group. Their findings show that diverse groups produce higher-quality ideas than homogeneous ones. Finally, Miller and del Carmen Triana (2009) suggest that firms with more ethnic diversity in their boardrooms are more innovative and have better reputations.

Yet, social psychology theory suggests that diversity brings conflict to the board and could result in a negative effect on its performance (Westphal and Milton, 2000). Consistent with this view, imposing an implicit quota may induce the board to compromise on directors' skills in return, which will eventually impair the board's effectiveness (Ferreira, 2010, Guest, 2019). Empirically, Campbell and Mínguez-Vera (2008) show that gender-diverse boards are slower and less effective in their decision-making process. Consistent with this view, García-Meca et al. (2015) indicate that increasing the number of foreign directors on bank boards harms performance, as measured by Tobin's Q. Also, Coles et al. (2020) find that board diversity has a negative impact on complex firms, such as banks, and that diversity increases the coordination costs of these firms' boards, ultimately leading to poorer performance.

Finally, some studies suggest that there is 'no relation' between board diversity (including ethnic diversity) and board performance (Carter et al., 2010, Guest, 2019). Their argument is based on the notion that the board, through the nomination committee, has a substantial impact on the appointment of new directors. Therefore, it is likely that the incumbent directors will select their new colleagues carefully, and hence select directors that are similar to them (Broome et al., 2011, Guest, 2019). As a result, the appointment of a new non-Caucasian director, in such cases, might not result in actual change in the decision dynamic within the board. Tokenism theory (Kanter, 1987) also points towards no association between board diversity and efficacy. It suggests that directors from minority groups might not be able to challenge other directors' opinions due to feeling themselves to be under intensified scrutiny (Guest, 2019). This might discourage a non-Caucasian director from outperforming or interrogating others' opinions.

Consistent with the 'no relation' view, Carter et al. (2010) find that there is no association between the ethnic diversity of the board and either Tobin's Q or return on assets (ROA). In addition, Guest (2019) finds no association between boards' ethnic diversity and their monitoring performance.

2.3. Ethnic diversity and financial reporting decisions

Although the majority of studies in the ethnic diversity field investigate the influence of ethnic minorities on firm performance, only a few examine the effect of minorities on financial reporting outcomes. Financial reporting quality is vital in order for investors and regulators to monitor, and take timely corrective action to eventually improve, firm performance. To the best of my knowledge, only Guest (2019) and Lourie et al. (2018) investigate the relationship between ethnic minorities and financial reporting decisions. Guest (2019) investigates the

effect of an ethnically diverse board on monitoring, whereas Lourie et al. (2018) explore the association between CFO ethnicity and accounting conservatism.

Specifically, Guest (2019) explores the effect of ethnically diverse boards on a variety of monitoring outcomes: (1) CEO compensation, (2) accounting misstatement, (3) CEO turnover-performance sensitivity and (4) acquisition performance. Interestingly, he finds no evidence that ethnically diverse boards perform differently than non-diverse boards. Although Guest (2019) uses accounting misstatement as a financial reporting quality outcome, I believe that using the timeliness of LLP recognition provides further insights about the link between board diversity and corporate reporting quality. Since LLP is highly related to bank risks, and is the banks' largest single accrual, the timeliness of LLP informs me about the risk tolerance of the board. Finally, Lourie et al. (2018) find that non-Caucasian CFOs in American firms have a higher propensity to use conservative accounting than Caucasian CFOs, consistent with the view that non-Caucasian individuals are more risk averse than their Caucasian counterparts.

2.4. Ethnicity and risk taking

Although several studies investigate the effect of ethnic background on *individuals'* risk-taking decisions at the personal level, I am unaware of any study, apart from Lourie et al. (2018)[9], that investigates such an effect at the corporate level. My study aims to fill this gap by investigating the effect of directors' ethnicity on the timeliness of LLP reporting in banks.

At the individual level, Brown (2007) reports that Africans and Hispanics are less likely to invest in stocks than Caucasians are. In addition, she shows that low-income Caucasians invest in the stock market significantly more than higher-income Africans or Hispanics. Benjamin et al. (2010) find evidence that Asian-Americans and African-Americans are more risk averse than Caucasian-Americans, and Bonaparte et al. (2017) show that minorities are less likely to invest in risky assets. The theory of discrimination provides a possible justification for this behaviour. It suggests that individuals from minority groups overstate their risk exposure, which leads them to be more risk averse than individuals from the majority groups (Bonaparte et al., 2017).

2.5. Research hypotheses

We hypothesise that ethnically diverse boards are associated with timelier LLP reporting. My hypothesis is based on a number of arguments: First, directors from minority groups are expected to monitor managers more effectively (Bonaparte et al., 2017, Guest, 2019).

[9] This study was reviewed in the previous section.

Minority group members are more sensitive towards inequity; thus, they are expected to challenge managers' decisions (Guest, 2019). In a similar way, Broome et al. (2010) suggest that directors from non-Caucasian ethnic backgrounds have weaker relationships with Caucasian board members, which shows that they are more independent than Caucasian directors. Second, Bonaparte et al. (2017) suggest that individuals from minority groups are risk averse. This characteristic may apply to board members from minority groups and drive them to support more risk-averse decisions, such as timelier recognition of LLP. In addition, diverse boards are generally expected to outperform non-diverse boards because diversity allows for more ideas and viewpoints to be discussed in the boardroom, which helps the board arrive at better decisions (Hillman et al., 2002, Coles et al., 2020). In other words, the knowledge base of a diverse board, arguably, allows it to perform its duties more effectively, and accordingly be more able to reduce agency costs and deter the managers from gaining private benefits at the expense of the shareholders. In the banking context, a diverse board is more capable of challenging bank managers over LLP reporting and thus deterring them from delaying LLP recognition to manage earnings upward. Hence, I expect banks with diverse boards to use conservative LLP reporting.

H1: *A diverse board is associated with timelier LLP recognition.*

In addition, the board of directors delegates its responsibilities to committees within the board, such as the audit committee, compensation committee, and nomination committee. The audit committee is responsible for overseeing the financial reporting process; its committee members frequently meet with managers and auditors to review financial reporting decisions (Badolato et al., 2014, Klein, 2002). Hence, the audit committee has a direct impact on financial reporting outcomes. In addition, the decision dynamics in the audit committee are similar to those in the board of directors, with the audit committee members giving and discussing their opinions in order to reach a decision. I thus apply the same theories used in the board diversity context to the audit committee. Consequently, and in the light of the previous discussion for H1, I expect diverse audit committees to be associated with timelier LLP recognition than non-diverse audit committees.

H2: *A diverse audit committee is associated with timelier LLP recognition.*

Next, I investigate how bank risk can moderate the above relationships. Several studies suggest that conservatism reduces bank risk. Specifically, they suggest that accounting conservatism reduces overinvestment and promotes cautious investment (Lara et al., 2011, Ahmed and Duellman, 2011, Lara et al., 2016, Hsu et al., 2017, Biddle et al., 2020). Consistent with this argument, Akins et al. (2017) find that banks that report timelier LLP have higher loan quality. They argue that timelier LLP reporting allows banks to discover bad loans earlier

and thus take corrective actions. Hence, diverse boards are more likely to make cautious decisions, such as reporting timelier LLP, during periods of financial distress, to reduce the likelihood of default.

Furthermore, external monitoring is expected to increase during periods of financial distress. Shareholders, debtholders, and bank regulators monitor vulnerable banks more closely. Hence, independent directors are likely to be more cooperative by pushing for more transparent financial reporting to protect their reputations in the market for directors.

Overall, if ethnically diverse boards are more conservative and more effective at monitoring than non-diverse boards, I expect timelier LLP reporting to be more evident in banks that have ethnically diverse boards and a higher risk of default. In addition to publicly available data, the board has access to the bank's private information, which allows it to evaluate the bank's financial health. Hence, I hypothesise that diverse boards in banks with higher default risk will have a higher tendency to take conservative decisions and thus report timelier LLP.

H3: *A diverse board (audit committee) is associated with timelier LLP recognition when the bank has a high default risk.*

3. Data and methodology

3.1. Ethnic diversity

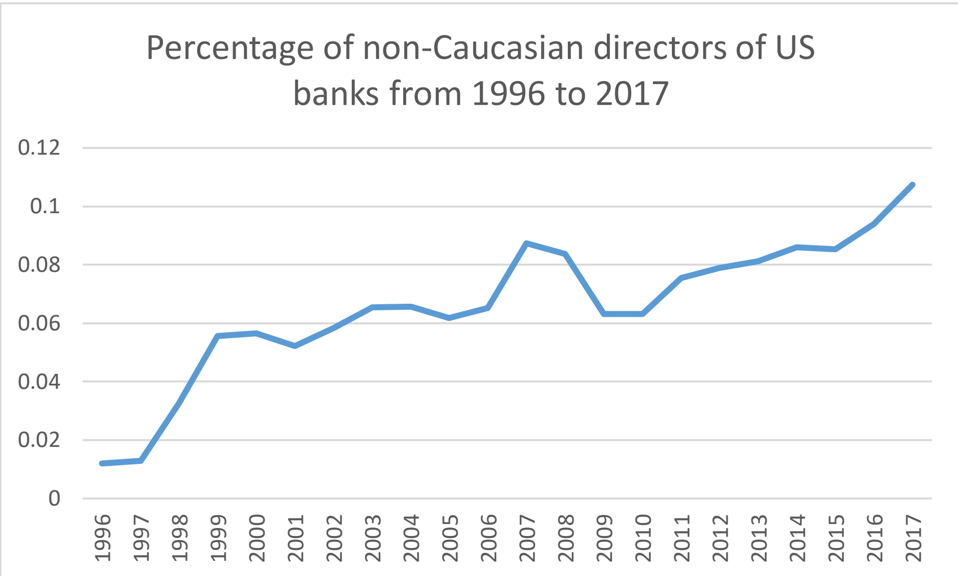
We define the ethnic diversity of the board as the number of non-Caucasian independent directors over the total number of independent directors on the board, while I use a binary variable, which takes the value of one if at least one member of the audit committee is non-Caucasian and zero otherwise, to capture the audit committee's diversity. The majority of the data related to directors' ethnicities are available on Institutional Shareholder Services (ISS). However, when information about ethnicity is missing, I follow Lourie et al. (2018) and determine the ethnic group by using name ethnic classifier software (Ye et al., 2017, Ye and Skiena, 2019). The name ethnic classifier software uses a news/blog analysis system, called Lydia, to predict the ethnicity of the entered name (Ambekar et al., 2009). The software categorises names into Caucasian, Hispanic, African, or Asian.

An inherent limitation of my approach is my use of this software to estimate some of my ethnicity data. Hence, the accuracy of the software in predicting directors' ethnicities is vital for the reliability of my tests. To ensure the accuracy of my software predictions, I compare the directors' ethnicities that I collect from the Institutional Shareholder Services (ISS) database with the software's predictions. The results show that the software correctly predicts

director ethnicity in approximately 99% of the cases, confirming its reliability. I also emphasise that there is no reason to believe that the trivial amount of error in my ethnicity data is systematic in a way that could be driving my results[10]. Ward et al. (2009) and Lourie et al. (2018) provide more details on the reliability of the software's predictions.

Interestingly, I find a significant increase in the percentage of non-Caucasian directors on banks' boards from 1996 to 2017. Figure 1 illustrates my finding in a graph. Specifically, I find that the percentage increases from 1% in 1996 to 11% in 2017, which highlights the relevance of my study.

Figure 3-1 *Percentage of non-Caucasian directors of US banks for the period between 1996 and 2017.*



3.2. LLP

We start with the following *modified* model of Beatty and Liao (2014):

$$LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 \text{Change in } NPL_{it} + \alpha_3 \text{Change in } NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_{it} + \alpha_7 Earnings\ before\ LLP_{it} + \alpha_8 Tier\ 1\ capital\ \%_{it-1} + \alpha_9 Loan\ loss\ reserves_{it-1} + \alpha_{10} Charge-off_{it} + \sum Board-level\ controls + \text{Fixed effects} + \varepsilon_{it} \quad \ldots\ldots (1)$$

LLP is the loan loss provision as a percentage of the total loans for firm *i* and time *t*. The *Change in NPL* variables represent the change in non-performing loans (NPL) over the

[10] If my argument that the software errors are unsystematic does not hold, then I should find no association between ethnicity and financial reporting quality, which is in contrast to my actual findings.

quarter. A loan is considered non-performing when its associated borrower fails to make any interest or principal payment for a specific period, typically 90 days.

Model 1 includes future (t+1), current (t) and prior (t-1, t-2) NPL because banks use forward-looking, current and past information to estimate LLP (Beaver and Engel, 1996, Bushman and Williams, 2012, Bushman and Williams, 2015, Beatty and Liao, 2014). LLP is considered timely if there is a positive association between *LLP* and *Change in* NPL_{t+1} and *Change in* NPL_t (Bushman and Williams, 2012, Black and Gallemore, 2013, Beatty and Liao, 2014, Nicoletti, 2018). In particular, a positive association between *Change in* NPL_{t+1} and *LLP* indicates that banks incorporate their private information about loan portfolio risk by recognising LLP before bad loans become non-performing; a positive relationship between *Change in* NPL_t and *LLP* suggests that banks incorporate current non-performing loans in LLP recognition. Together, *Change in* NPL_{t+1} and *Change in* NPL_t capture the timeliness of LLP reporting by banks. Also, Model 1 controls for bank size using *ln Assets.* It is important to control for bank size in LLP models because the level of regulatory scrutiny of LLP reporting varies with bank size (Bushman and Williams, 2012, Beck and Narayanamoorthy, 2013). *Change in loan* controls for the change in the size of a bank's loan portfolio. Banks also use charge-off and loan loss reserves to estimate the proper amount of LLP. Thus, the model includes *Charge-off* and *Loan loss* reserves to control for this factor. To capture the effect of earnings management and capital management (Collins et al., 1995, Beatty et al., 1995, Ahmed et al., 1999), I use *Earnings before* LLP_t, and the lagged tier 1 risk-based capital ratio (*Tier 1 capital* $\%_{t-1}$).

We also add to Model 1 a vector of board-level controls. Specifically, I use *Independent directors on BOD %*, *Board size*, *Gender diversity%*, and *CEO/chairman duality*. A more independent board is expected to be more effective in monitoring management (Beasley, 1996). Also, some studies suggest that board size plays an active role in the monitoring of management (De Andres and Vallelado, 2008, Adams and Mehran, 2012), and since banks are complex organisations, large boards are more likely to be more effective at monitoring executives. Moreover, since it is shown that banks with gender-diverse boards are associated with timelier and more conservative financial reporting, I control for the gender diversity of the board (García-Sánchez et al., 2017, Janahi et al., 2021). Finally, a powerful CEO can limit information flows to the board and impair the board's ability to adequately monitor firm decisions (Fama and Jensen, 1983, Vallascas et al., 2017). For example, Farber (2005) shows that firms with CEO/chairman duality are more likely to be involved in financial reporting fraud. Consistent with this, Efendi et al. (2007) report that such firms are more likely to have financial reporting misstatements. Therefore, I use the control variable *CEO/chairman duality*.

Finally, I control for time-variant characteristics that might affect LLP reporting using quarter-year fixed effects, and for time-invariant characteristics using bank fixed effects.

3.3. Ethnic Diversity Measures

Due to that the aim of the paper is to investigate the effect of the ethnic diversity of the *board* and the *audit committee* on financial reporting, I implement two diversity measures. The first diversity measure is *Non-Caucasian NED%.* This variable is computed as the ratio of the non-Caucasian *independent* directors in the board. I include independent directors only because the monitoring responsibilities rest mainly on the independent members of the boards. Second, I introduce *Non-Caucasian audit* to capture the effect of audit committee diversity on financial reporting quality. This variable is a dummy variable that takes the value of 1 if the audit committee has at least one non-Caucasian director and zero otherwise.

Finally, to capture the effect of ethnic diversity on the timeliness of LLP, I interact the ethnic diversity variables with both *Change in NPL$_{t+1}$* and *Change in NPL$_t$*. I expect a positive association between LLP and at least one of these interactions.

Hence, my final models are as follows:

$$LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Non - Caucasian\ NED\%_{it} + \alpha_4 Change\ in\ NPL_{it+1} * Non - Caucasian\ NED\%_{it} + \alpha_5 Change\ in\ NPL_{it} * Non - Caucasian\ NED_{it} + \alpha_6 Change\ in\ NPL_{it-1} + \alpha_7 Change\ in\ NPL_{it-2} + \alpha_8 ln\ Assets_{it-1} + \alpha_9 Change\ in\ loan_{it} + \alpha_{10} Earnings\ before\ LLP_{it} + \alpha_{11} Tier\ 1\ capital\ \%_{it-1} + \alpha_{12} Loan\ loss\ reserves_{it-1} + \alpha_{13} Charge - offs_{\ it} + \sum Board - level\ controls + \text{Fixed effects} + \varepsilon_{it}$$
……..……..(2a)

$$LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Non - Caucasian\ audit_{it} + \alpha_4 Change\ in\ NPL_{it+1} * Non - Caucasian\ audit_{it} + \alpha_5 Change\ in\ NPL_{it} * Non - Caucasian\ audit_{it} + \alpha_6 Change\ in\ NPL_{it-1} + \alpha_7 Change\ in\ NPL_{it-2} + \alpha_8 ln\ Assets_{it-1} + \alpha_9 Change\ in\ loan_{it} + \alpha_{10} Earnings\ before\ LLP_{it} + \alpha_{11} Tier\ 1\ capital\ \%_{it-1} + \alpha_{12} Loan\ loss\ reserves_{it-1} + \alpha_{13} Charge - offs_{\ it} + \sum Board - level\ controls + \text{Fixed effects} + \varepsilon_{it}$$
……..……..(2a)

3.4. Risk

We use default risk as a proxy for the level of bank risks. I use the Z-score as a measure of default risk, widely used in the banking literature (Chiaramonte et al., 2015, Boyd et al., 2006, Guo et al., 2015, Lepetit and Strobel, 2015). I calculate the Z-score as follows: I add banks' ROA to their capital and divide the total by the three-year moving standard deviation of the ROA (Guo et al., 2015). By definition, a higher Z-score indicates a greater distance from

insolvency (i.e. low default risk), while a lower score indicates a shorter distance from insolvency. I consider banks with Z-scores below the sample median to have high default risk, and those with Z-scores above the sample median to have low default risk.

3.5. Sample

Our analysis is based on a sample of listed financial institutions, as I use accounting data from COMPUSTAT and board of director data from ISS. Accounting data are available from 1984 through 2018, while the board of directors' data are available from 1996 to 2017 only. Hence, my sample period starts in 1996 and ends in 2017. The ethnicities of the directors are mainly obtained from ISS. However, when the data are missing from ISS, I use the name ethnic classifier software mentioned earlier to predict the ethnicity of the directors. I delete observations where there are missing variables. I also limit my analysis to the S&P1500 because ISS only provides board data for those firms. Finally, I trim all the continuous variables at the 1% and 99% levels. My sample comprises 5,109 observations.

4. Results

4.1. Descriptive statistics

Table 3-1 provides descriptive statistics for the study sample. The table shows that, on average, non-Caucasian independent directors represent about 7% of my sample. However, around 37% of the banks in my sample have at least one non-Caucasian member in their audit committee. The average reported LLP is 0.001 of total loans, whereas the maximum is 0.025, which is similar to other studies (Black and Gallemore, 2013, Nicoletti, 2018). The average bank size is a book value of assets of $57 billion, while the largest (smallest) bank in my sample has a book value of assets of $2,322 billion ($2 billion). As for regulatory capital, the average tier 1 capital ratio is 10.8%, and the maximum (minimum) is 19.5% (5.8%). Regarding board characteristics, my sample shows that, on average, 76% of the banks have independent directors and 11% have female directors; also, on average, the banks have 13 board members, and 8.6% of CEOs also serve as chairman.

Table 3-1 *Summary statistics*

This table reports summary statistics for the sample of US commercial banks. *Assets* is the book value of the bank's total assets in millions of dollars. All other variable definitions are provided in Appendix A.

Variable	Observations	Mean	Standard deviation	Min	Max
LLP	5,109	0.001	0.002	-0.006	0.025
LLP ($ million)	5,109	64.36	346.16	-61	13,380
Loan loss reserves	5,109	0.015	0.007	0.003	0.05

Charge-off	5,109	0.001	0.002	0	0.015
Non-Caucasian NED %	5,109	0.069	0.091	0	0.333
Non-Caucasian audit	5,109	0.368	0.482	0	1
Change in NPL	5,109	0.000	0.002	-0.009	0.015
Change in loan	5,109	0.021	0.046	-0.096	0.422
Earnings before LLP	5,109	0.006	0.003	-0.002	0.038
Assets ($ million)	5,109	57,675	160,502	2,117	2,321,963
Tier 1 capital %	5,109	0.108	0.026	0.058	0.195
Independent directors on BOD %	5,109	0.755	0.122	0.308	0.933
Gender diversity %	5,109	0.109	0.080	0	0.364
Board size	5,109	13.036	3.379	6	25
CEO/chairman duality	5,109	0.086	0.280	0	1

Table 3-2 shows the correlations between my variables. The correlation matrix indicates that *LLP* is positively correlated with *Earnings before LLP*, which suggests that banks use LLP to manage earnings. This finding is consistent with the extensive literature promoting LLP as an important earnings management tool (Ahmed et al., 1999, Pérez et al., 2008, Cornett et al., 2009, Cheng et al., 2011, Cohen et al., 2014, Beatty and Liao, 2014). In addition, the table suggests that LLP is positively correlated with bank size, which is consistent with the view that larger banks are more diversified and can take higher risks (Beatty and Liao, 2014). Finally, the correlation matrix shows that there is a weak negative (positive) correlation between the percentage of independent board members (*Board size*) and *LLP*.

As for independent non-Caucasian board members, the correlation matrix suggests that they are associated with a higher LLP, and tend to work in safer environments, as observed by a positive correlation with bank size (*ln Assets*) and *Tier 1 capital %*. Also, the independent non-Caucasian directors are positively correlated with the percentage of independent directors on the board.

Table 3-2 *Correlation matrix*

This table reports the correlation matrix between the variables, all the definitions for which are available in Appendix A.

***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

		1	2	3	4	5	6	7	8	9	10	11	12	13
1.	LLP $_{t}$	1												
2.	Non-Caucasian NED % $_{t}$	0.073***	1											
3.	Non-Caucasian audit $_{t}$	0.111***	0.610***	1										
4.	Change in NPL $_{t}$	0.287***	0.014	-0.016	1									
5.	Loan loss reserves $_{t-1}$	0.502***	0.108***	0.143***	-0.028	1								
6.	Charge-off $_{t}$	0.860***	0.087***	0.149***	0.086***	0.597***	1							
7.	Change in loan $_{t}$	-0.100***	-0.014	-0.020	0.066***	-0.179***	-0.157***	1						
8.	ln Assets $_{t-1}$	0.135***	0.253***	0.379***	-0.022	0.131***	0.192***	-0.050***	1					
9.	Earnings before LLP $_{t}$	0.327***	0.029*	0.092***	0.027	0.345***	0.318***	-0.060***	0.249***	1				
10.	Tier 1 capital % $_{t-1}$	0.020	0.132***	-0.046**	-0.115***	0.258***	0.077***	-0.040**	-0.291***	0.068***	1			
11.	Independent directors on BOD %$_{t-1}$	-0.031*	0.119***	0.119**	-0.053***	0.039**	-0.0003	-0.074***	0.149***	-0.025	0.178***	1		
12.	Board size $_{t}$	0.071***	-0.070***	0.149***	0.025	0.073***	0.074***	0.001	0.295***	0.161***	-0.227***	-0.092***	1	
13.	CEO/chairman duality $_{t}$	0.009	0.036*	0.031*	0.011	0.011	-0.004	0.0419**	0.154***	0.078***	-0.135***	-0.012	0.076***	1

4.1. Main results

The results of model 1b are reported in Table 3-3. The coefficient for *Change in NPL_{t+1}* captures the extent to which the *expected (forward-looking)* change in NPL is incorporated in the reported LLP, while *Change in NPL_t* represents the extent to which the *current* change in NPL is incorporated in the LLP. To support my hypotheses, I would expect the coefficients on the interaction terms *Change in NPL_{t+1} * Non-Caucasian NED %* (*Change in NPL_{t+1} * Non-Caucasian audit*) and *Change in NPL_t * Non-Caucasian NED %* (*Change in NPL_t * Non-Caucasian audit*), or at least one of them, to be positive and significant.

The results show that banks with more independent non-Caucasian board members (diverse audit committees) are associated with timelier LLP reporting than banks with non-diverse boards. The coefficients on *Change in NPL_{t+1}* are negative but insignificant, indicating that non-diverse boards are not associated with forward-looking LLP reporting. Yet, the coefficients on the interaction terms, *Change in NPL_{t+1} * Non-Caucasian NED %* (*Change in NPL_{t+1} * Non-Caucasian audit*), are positive and significant at the 10% (5%) level. In economic terms, for bank with 6.8% of non-Caucasian NED[11], a one-standard deviation increase in *Change in NPL_{t+1}* and in non-Caucasian NED %, will result in reporting $218,000 more LLP. This is significant in economic terms as it forms a 3.2% of the median LLP in my sample. For my audit committee analysis, for each one-standard deviation increase in *Change in NPL_{t+1}*, a bank with diversified audit committee will report an additional $1.281 million in LLP (18.6% of the median LLP).

Also, the coefficient on the variable *Change in NPL_t* is positive and significant at the 1% level, indicating that non-diverse boards incorporate the current change in NPL in their LLP reporting. The interaction terms *Change in NPL_t * Non-Caucasian NED %* and *Change in NPL_t * Non-Caucasian audit* are insignificant in both models, indicating that diverse boards are not different from non-diverse boards in incorporating current changes in the NPL in their reported LLP. Overall, my results suggest that board diversity (audit committee diversity) in terms of ethnicity is associated with timelier LLP reporting and, thus, plays an important role in enhancing financial reporting transparency in the banking industry[12].

11 That is the median of my sample.

[12] To ensure the robustness of my findings, I use the alternative model variants suggested by Beatty and Liao (2014), and my results remain the same. Specifically, I use the following models:

1. $LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Change\ in\ NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_{it} + \alpha_7 Earnings\ before\ LLP_{it} + \alpha_8 Tier\ 1\ capital\ \%_{it-1} +$ Fixed effects $+ \varepsilon_{it}$
2. $LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Change\ in\ NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_{it} +$

To further control for omitted variable bias related to banks' time-invariant characteristics such as risk culture, I add bank fixed effects to my specification. Governance characteristics tend to change over a longer period; thus, using bank fixed effects controls for many omitted variables related to time-invariant characteristics. The results of the bank fixed effects models are reported in columns 3 and 4 of Table 3-3. The results show that the level of significance increases with this model specification. In particular, the interaction terms *Change in* NPL_{t+1} ** Non-Caucasian NED %* (*Change in* NPL_{t+1} ** Non-Caucasian audit*) become significant at the 5% (1%) level[13,14].

As for the control variables, *Change in* NPL_{t-1}, *Change in* NPL_{t-2} are positively associated with *LLP*, indicating that banks use prior-period information for LLP reporting. Also, *Change in loans* has a positive association with *LLP*, suggesting that loan growth positively affects loan risks. Regarding bank size, I find a positive association between bank size and LLP, which is consistent with prior evidence showing that large banks are more diversified and take on higher risks. Also, my results indicate that banks use LLP to manage earnings and regulatory capital. The results show a positive (negative) association between *Earnings before LLP* (*Tier 1 capital %*) and *LLP*. This is consistent with many of the prior studies on LLP and earnings and capital management (Ahmed et al., 1999, Kanagaretnam et al., 2003, Pérez et al., 2008, Cornett et al., 2009, Cheng et al., 2011, Bushman and Williams, 2012, El Sood, 2012, Cohen et al., 2014, Beatty and Liao, 2014, Curcio and Hasan, 2015).

Finally, I show the interaction plot in figures 3-2 and 3-3. Figure 3-2 depicts the difference in LLP timelines in boards with non-Caucasian NEDs in comparison to banks with Caucasian-only NEDs. diversified boards and non-diversified boards, while Figure 3-3 plots the difference in LLP timeliness in boards with non-Caucasian audit committee members in comparison to banks with Caucasian-only audit committee members.

$\alpha_7 Earnings\ before\ LLP_{it} + \alpha_8 Tier\ 1\ capital\ \%_{it-1} + \alpha_9 Loan\ loss\ reserves_{it-1} +$ Fixed effects $+ \varepsilon_{it}$

3. $LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Change\ in\ NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_{it} + \alpha_7 Earnings\ before\ LLP_{it} + \alpha_8 Tier\ 1\ capital\ \%_{it-1} + \alpha_9 Charge-off_{it} +$ Fixed effects $+ \varepsilon_{it}$
4. $LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Change\ in\ NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_t + \alpha_7 Earnings\ before\ LLP_{it} + \alpha_8 Tier\ 1\ capital\ \%_{it-1} + \alpha_9 Loan\ loss\ reserves + \alpha_{10} Charge-off + \alpha_{11} \%\Delta\ GDP_t + \alpha_{12}\ \%\Delta unemployment_t + \alpha_{13} \%\Delta Case\_Shiller\ house\ index_t +$ Fixed effects $+ \varepsilon_{it}$

[13] In untabulated results, I control for the lagged dependent variable to correct for endogenous risk persistence (Bushman and Williams, 2015). My results remain largely the same.
[14] In untabulated robustness checks, I control for the percentage of non-Caucasian *executives* on the board and my results are virtually similar to those reported earlier.

As non-Caucasian NED % is a continuous variable, I follow Holmbeck (2002) and choose the mean, one standard deviation above the mean, and one standard deviation below the mean when drawing the interaction plot. Both figures suggest that ethnic diversity provides a timelier LLP reporting. Figure 3-2 and Figure 3-3 clearly show that the slope of the relationship between *Change in* NPL_{t+1} and *LLP* increases as *non-Caucasian NED %* increases and in banks with diversified audit committees. Lines correspondents to non-diversified boards and audit committees are flat suggesting no association between *Change in* NPL_{t+1} and *LLP*. On the other hand, non-Caucasian audit has a positive slope while the slope of the *non-Caucasian NED %* increases with the increase in *non-Caucasian NED %.*

Figure 3-2 *Graphical post-hoc probing – non-Caucasian NED %*

This figure plots the interaction *Change in* NPL_{t+1} * *Non-Caucasian NED %*. The X axis is the *Change in* NPL_{t+1}, while the Y axis is the LLP.

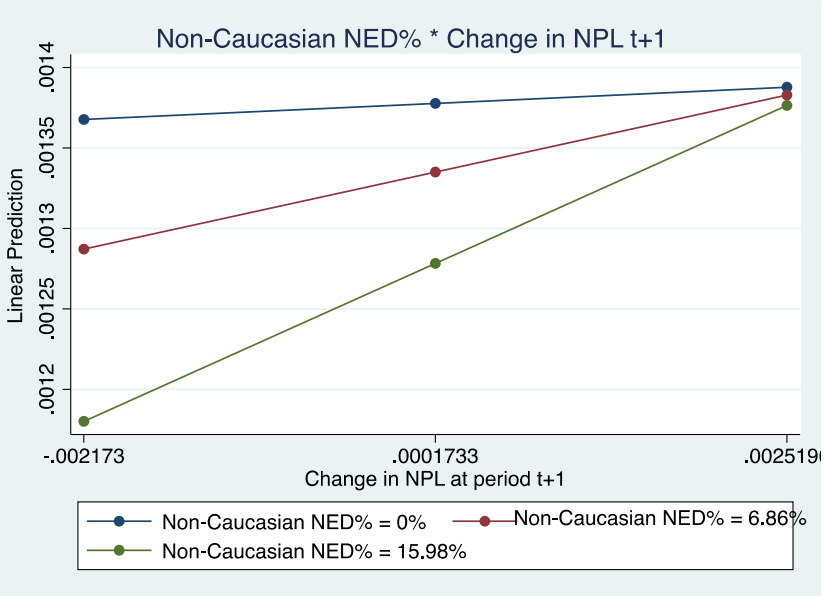


Figure 3-3 *Graphical post-hoc probing – non-Caucasian audit*

This figure plots the interaction *Change in* NPL_{t+1} * *Non-Caucasian NED %*. The X axis is the *Change in* NPL_{t+1}, while the Y axis is the LLP.

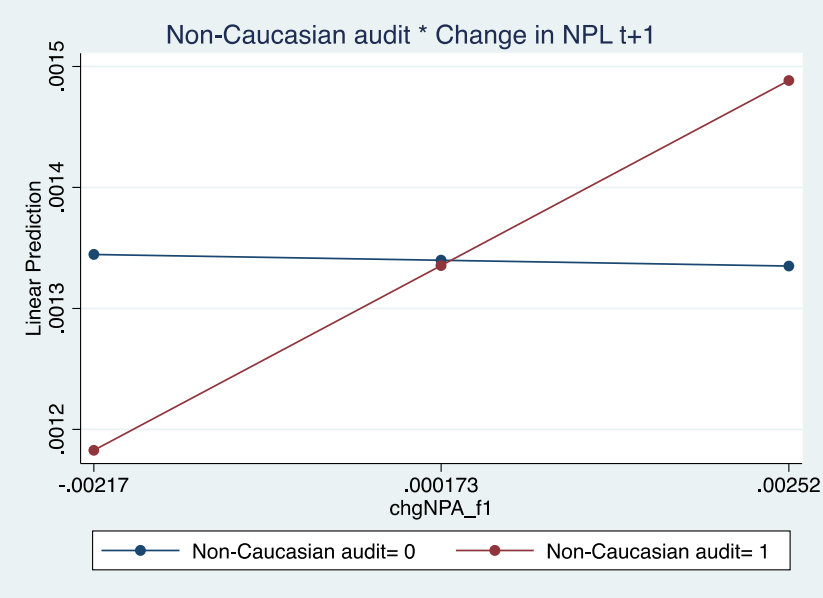

Non-Caucasian audit * Change in NPL t+1
Linear Prediction
.0012
.0013
.0014
.0015
-.00217
.000173
.00252
chgNPA_f1
Non-Caucasian audit= 0
Non-Caucasian audit= 1

Table 3-3 *Main results*

This table reports the results of the main regressions. Columns 1 and 3 show the results when using *Non-Caucasian NED %* as the diversity measure, while I use *Non-Caucasian audit* as the diversity measure in columns 2 and 4. Bank fixed effects are used in the results reported in columns 3 and 4 only. Quarter-year fixed effects are used in all the models. All variable definitions are provided in Appendix A. The main variables of interest are written in bold. Robust standard errors are given in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

VARIABLES	(1) **Non-Caucasian NED %**	(2) **Non-Caucasian audit**	(3) **Non-Caucasian NED %**	(4) **Non-Caucasian audit**
Change in NPL $_{t+1}$	0.0150	0.00739	0.00428	-0.00204
	(0.0132)	(0.0124)	(0.0126)	(0.0119)
Non-Caucasian NED % $_{t}$	0.000235		-0.000686	
	(0.000309)		(0.000464)	
Change in NPL $_{t+1}$ * Non-Caucasian NED % $_{t}$	**0.193***		**0.235****	
	(0.105)		**(0.106)**	
Change in NPL $_{t}$	0.0877***		0.0792***	0.0800***
	(0.0184)		(0.0181)	(0.0193)
Change in NPL $_{t}$ * Non-Caucasian NED % $_{t}$	0.127		0.164	
	(0.131)		(0.129)	
Non-Caucasian audit $_{t}$		5.85e-05		-2.09e-05
		(4.61e-05)		(6.49e-05)
Change in NPL $_{t+1}$ * Non-Caucasian audit $_{t}$		**0.0621*****		**0.0672*****
		(0.0192)		**(0.0191)**
Change in NPL $_{t}$ * Non-Caucasian audit $_{t}$		**0.0238**		**0.0344**
		(0.0258)		**(0.0255)**
Change in NPL $_{t-1}$	0.0632***	0.0621***	0.0589***	0.0571***
	(0.0129)	(0.0127)	(0.0128)	(0.0127)
Change in NPL $_{t-2}$	0.0371***	0.0362***	0.0359***	0.0344***
	(0.00900)	(0.00896)	(0.00918)	(0.00915)
Change in Loans $_{t}$	0.00109***	0.00109***	0.000760**	0.000729**
	(0.000389)	(0.000392)	(0.000360)	(0.000359)
Earnings before LLP $_{t}$	0.0468***	0.0455***	0.0862***	0.0842***
	(0.0151)	(0.0146)	(0.0199)	(0.0199)
ln Assets $_{t-1}$	-0.00004**	-0.00005**	0.000204***	0.000183**
	(0.00002)	(0.00002)	(0.00008)	(0.00008)
Tier 1 capital % $_{t-1}$	-0.00318***	-0.00324***	-0.00434***	-0.00475***
	(0.00109)	(0.00109)	(0.00155)	(0.00153)
Independent directors on BOD % $_{t}$	-0.000192	-0.000173	0.000102	0.000105
	(0.000154)	(0.000152)	(0.000215)	(0.000211)
Gender diversity % $_{t}$	0.000256	0.000268	-0.00008	-0.00007

	(0.000357)	(0.000351)	(0.000437)	(0.000432)
Board size $_t$	0.0000	0.0000	0.00001	0.00002
	0.0000	0.0000	0.00001	0.00001
CEO/chairman duality $_t$	0.00007	0.00007	0.00004	0.00005
	0.00005	0.00005	0.00005	0.00005
Loan loss reserves $_{t-1}$	-0.00369	-0.00327	-0.0135	-0.0126
	(0.00727)	(0.00731)	(0.00862)	(0.00859)
Charge-off $_t$	0.918***	0.915***	0.852***	0.853***
	(0.0392)	(0.0395)	(0.0508)	(0.0509)
Constant	0.000802***	0.000839***	-0.00164**	-0.00138**
	(0.000297)	(0.000288)	(0.000676)	(0.000678)
Observations	5,109	5,109	5,109	5,109
R-squared	0.800	0.801	0.768	0.769
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	No	No	Yes	Yes

4.1.1 Default risk and LLP timeliness

This section investigates how default risk moderates the effect ethnically diverse boards have on monitoring. If ethnically diverse boards are more conservative, I would expect that conservatism to be more evident in banks with higher default risk. A number of studies suggest that conservatism reduces default risk. Specifically, they suggest that accounting conservatism reduces overinvestment and promotes cautious investment (Lara et al., 2011, Ahmed and Duellman, 2011, Lara et al., 2016, Hsu et al., 2017, Biddle et al., 2020). More related to the banking context, Akins et al. (2017) show that timelier LLP is associated with improvement in loan quality, as timely LLP recognition enhances the possibility of bad loans being discovered earlier. Hence, it is likely that diverse boards take cautious decisions, such as reporting timelier LLP, during periods of financial distress, to avoid bankruptcy. Therefore, I split my full sample into banks with high and low default risk, and run the analysis again for each subsample.

The results in Table 3-4 indicate that, among banks with high default risk, diverse boards are associated with timelier LLP recognition. However, I do not find such an association for the group of banks with low default risk. Both *Change in* NPL_{t+1} * *Non-Caucasian NED %* (*Change in* NPL_{t+1} * *Non-Caucasian audit*) and *Change in* NPL_t * *Non-Caucasian NED %* (*Change in* NPL_t * *Non-Caucasian audit*) are insignificant in Panel A. In sum, my analysis indicates that diverse boards follow risk-averse reporting policies in periods of high default risk. Finally, I use an alternative measure of the Z-score. Specifically, I follow Chiaramonte et al. (2015) and replace ROA with ROAA, which stands for return on average assets, and my results hold.

Table 3-4 *A comparison between banks with high and low default risk*

This table shows the results of my analysis when I divide the full sample into banks with low and high default risk. High-default-risk banks are those with Z-scores below the sample median, while low-default-risk banks are those with Z-scores above the sample median. The Z-score is calculated as $\frac{ROA+Capital}{\sigma\ ROA}$. All other variables are explained in Appendix A. Columns 1 and 3 show the results from using *Non-Caucasian NED %* as the diversity measure, while I use *Non-Caucasian audit* as the diversity measure in columns 2 and 4. For brevity, I only report the variables of interest, with the main ones written in bold. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all the models. Robust standard errors are shown in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

	Banks with low default risk		**Banks with high default risk**	
	(1)	(2)	(3)	(4)
VARIABLES	**Non-Caucasian NED %**	**Non-Caucasian audit**	**Non-Caucasian NED %**	**Non-Caucasian audit**
Change in NPL $_{t+1}$	0.0230*	0.0208	-0.0111	-0.0195
	(0.0135)	(0.0134)	(0.0156)	(0.0138)
Change in NPL $_{t+1}$ * Non-Caucasian NED % $_t$	**0.0847**		**0.284***	
	(0.102)		**(0.167)**	
Change in NPL $_t$	0.0775***	0.0759***	0.0792***	0.0832***
	(0.0152)	(0.0161)	(0.0234)	(0.0254)
Change in NPL $_t$ * Non-Caucasian NED % $_t$	-0.0655		0.225	
	(0.0932)		(0.155)	
Change in NPL $_{t+1}$ * Non-Caucasian audit $_t$		**0.0255**		**0.0798*** **
		(0.0217)		**(0.0251)**
Change in NPL $_t$ * Non-Caucasian audit $_t$		-0.00985		0.0406
		(0.0200)		(0.0307)
Observations	2,554	2,554	2,555	2,555
R-squared	0.652	0.652	0.768	0.768
Other controls	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes

4.1.2 Effect of financial crisis on LLP timeliness

The 2007-09 financial crisis provides a quasi-natural experimental setting for my default-risk hypothesis. During the crisis, there was a spiralling collapse of many financial institutions, and many borrowers defaulted on their loans, which increased banks' loan risks. Consequently, a risk-averse bank would be expected to have taken cautious decisions regarding loan losses, and hence to have reported timelier LLP during that period. If my findings that banks with diverse boards report timelier LLP during periods of financial distress are robust, then I would expect to observe similar behaviour during the financial crisis period

of 2007-09. For brevity, I do not tabulate the results of this analysis. My results indicate, as expected, that, during the financial crisis period, diverse boards reported more conservatively, but outside of that period they acted no differently than non-diverse boards. To ensure the robustness of these findings, I redefine the crisis period as 2007-10 and obtain results similar to those for 2007-09.

Furthermore, I extend my analysis and examine the effect of capital constraints on the relationship between ethnic diversity and LLP timeliness. Banks with below-minimum regulatory capital face disciplinary action from regulators, which may even cause the cessation of operations. Bank regulatory capital provides an essential safeguard against a financial crisis. Banks with higher regulatory capital (strong banks) are more able to absorb sudden losses. Regulatory capital also limits banks' incentives for excessive risk taking by imposing minimum *risk-based* capital (Kim and Santomero, 1988). Consistent with this argument, Demirguc-Kunt et al. (2013) show that weak banks (those with lower regulatory capital) were more likely to exhibit poor market performance during the financial crisis. As a result, weak banks are more likely to use aggressive accounting to prevent their regulatory capital from falling below the minimum threshold. However, this is compensated by an increase in regulatory monitoring of these banks' financial reporting (Beck and Narayanamoorthy, 2013). Hence, I argue that ethnically diverse boards tend to respond to the increased monitoring by being more risk averse. Thus, I expect weak banks with diverse boards to be more conservative than strong banks during a financial crisis period. I consider banks with below-median tier 1 capital ratios during the financial crisis period to be weak banks (Beck and Narayanamoorthy, 2013)[15]. I thus limit my analysis to weak (banks with low tier 1 capital ratios) and strong (banks with high tier 1 capital ratios) banks during the financial crisis. My results (untabulated) are consistent with my predictions. Only weak banks with ethnically diverse boards were associated with improved LLP timeliness during the financial crisis.

5. Endogeneity and further robustness tests

5.1. Matched sample

We use propensity score matching to control for self-selection bias, since board structure is endogenously determined. The propensity-score-matching framework matches a bank with a diverse audit committee (treated) to another bank with a non-diverse audit committee (control) that is similar in terms of other observable characteristics. A causal link will be more evident if the difference in the control variables between the two groups is minimised so that they are

[15] my descriptive statistics shows that my median tier 1 regulatory capital ratio is almost 10%. Hence, for simplicity, I use 10% as my threshold to differentiate between weak and strong banks.

virtually similar. Panel A of Table 3-5 indicates that there are differences between banks with ethnically diverse audit committees and banks with non-diverse audit committees. Panel A shows that the control and treatment groups are significantly different in both firm-level and board-level characteristics. At the firm level, I notice that banks with diverse audit committees are significantly different in terms of LLP determinants (i.e. *Change in NPL*, *Loan loss reserves*, and *Charge-off*), being associated with lower increases in NPL, higher charge offs, and higher loan loss reserves than banks with non-diverse audit committees. Further, the statistics show that diverse audit committees are associated with larger banks and those with lower tier 1 capital ratios. Although the difference in tier 1 capital ratios between the two groups is statistically significant (at the 1% level), I believe that the difference is economically insignificant (the difference is 0.3% only). Finally, my analysis suggests that banks with diverse audit committees outperform banks with non-diverse audit committees, which is consistent with the view that diversity enhances firm performance (Watson et al., 1993, Bantel, 1993, McLeod et al., 1996, Miller and del Carmen Triana, 2009, Carter et al., 2003, Ntim, 2015). At the board level, Panel A of Table 3-5 shows that banks with diverse audit committees tend to have higher board independence, as measured by the percentage of independent board members, higher gender diversity, larger boards, and CEO and chairman positions held by the same person.

We begin by matching the treated and control groups by bank size (as observed by total assets). I use the one-to-one nearest neighbour procedure without replacement and impose a calliper of 0.1% of the standard deviation[16] of the probit transformation. I use all the control variables from Table 3-3 in the first-stage probit model. The final sample, post matching, consists of 2,740 observations (1,370 of each group). Panel B of Table 3-5 reports the differences in means between the treated and control groups after the propensity-score-matching procedure has been applied. This analysis suggests that the propensity score matching reduces the differences between the treatment and control groups. After matching, there is no significant difference between them in any of the control variables.

Column 1 of Panel C report the results of my regression estimation following the matching procedure. I use bank fixed effects to control for firm time-invariant unobservable characteristics. The results are consistent with my main findings. I also perform one-to-one matching with replacement and report the results in columns. The advantage of matching with replacement is that it allows for each observation from the control group to be paired with an observation from the treated group more than once, if no good match is available. This

[16] In an untabulated robustness test, I change the calliper level to 5%, 10%, 20%, and 25% and find that my results do not change.

procedure improves the matching efficiency and reduces bias. The results reported corroborate my initial findings.

We do not match my sample based on *Non-Caucasian NED %* because the independent variable must be a dummy in the first stage. However, in untabulated analysis, I convert my *Non-Caucasian NED %* into a dummy variable which takes the value 1 if there is at least one non-Caucasian independent member of the board of directors and 0 otherwise. My conclusion remains similar.

Table 3-5 *Matched sample*

This table shows the results after matching my sample using the propensity-score-matching procedure. I match each bank with a diverse audit committee to a bank with a non-diverse audit committee based on firm size. I perform one-to-one matching without (and with) replacement. I impose a calliper of 0.1% of the standard deviation. Panel A reports the difference between the means of the control and treated groups. Panel B reports the difference between the means after the propensity-score-matching procedure has been applied. Panel C shows the results after I have re-estimated the model using the matched sample. Column 1 reports the results of performing matching without replacement, while column 2 reports the results of the matching with replacement. All variable definitions are available in Appendix A. For brevity, I report the variables of interest only. The variables of interests are written in bold. Quarter-year fixed effects and all control variables are included in all the models, while bank fixed effects are only used when stated. Robust standard errors are shown in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Panel A – difference between means of the two groups before matching

VARIABLES	1 Control Diversity=0	2 Treated Diversity=1	3 Difference [1-2]
Change in NPL $_{t+1}$	0.00023	0.00008	0.00014**
Change in NPL $_{t}$	0.00018	0.00008	0.00010*
Change in NPL $_{t-1}$	0.00019	0.00010	0.00009*
Change in NPL $_{t-2}$	0.00016	0.00009	0.00007
Change in loan $_{t}$	0.022	0.021	0.001
Earnings before LLP $_{t}$	0.0059	0.0064	-0.0005***
ln Assets $_{t-1}$	9.43	10.43	-1.00***
Tier 1 capital % $_{t-1}$	10.92	10.67	0.25***
Independent directors % $_{t}$	74.39	77.54	-3.15***
Gender diversity % $_{t}$	10.06	12.34	-2.28***
Board size $_{t}$	12.64	13.71	-1.06***
CEO/chairman duality $_{t}$	0.080	0.096	-0.016**
Loan loss reserves $_{t-1}$	0.014	0.016	-0.002***
Charge-off $_{t}$	0.0010	0.0016	0.0006***

Panel B – difference between means after matching

VARIABLES	1 Control Diversity=0	2 Treated Diversity=1	3 Difference [1-2]

Change in NPL $_{t+1}$	0.00015	0.00013	0.000
Change in NPL $_{t}$	0.00016	0.0012	-0.001
Change in NPL $_{t-1}$	0.00014	0.00014	0.000
Change in NPL $_{t-2}$	0.00009	0.00006	0.000
Change in loan $_{t}$	0.023	0.023	0.000
Earnings before LLP $_{t}$	0.006	0.006	0.000
ln Assets $_{t}$	9.91	9.90	0.010
Tier 1 capital % $_{t-1}$	10.83%	10.87%	0.000
Independent directors % $_{t}$	75.92%	76.15%	-0.002
Gender diversity % $_{t}$	10.99%	11.44%	-0.005
Board size $_{t}$	13.33	13.33	0.000
CEO/chairman duality $_{t}$	0.09	0.08	0.010
Loan loss reserves $_{t-1}$	0.015	0.015	0.000
Charge-off $_{t}$	0.001	0.001	0.000

Panel C – Regression results after matching

VARIABLES	(1) **Without replacement**	(2) **With replacement**
Change in NPL $_{t+1}$	0.000674	-0.0339*
	(0.0172)	(0.0196)
Change in NPL $_{t+1}$ * Non-Caucasian audit $_{t}$	0.0467**	0.0782**
	(0.0231)	(0.0318)
Change in NPL $_{t}$	0.0776***	0.121***
	(0.0262)	(0.0380)
Change in NPL $_{t}$ * Non-Caucasian audit $_{t}$	0.0190	-0.00747
	(0.0283)	(0.0400)
Observations	2,740	1,428
R-squared	0.767	0.753
Other controls	Yes	Yes
Quarter-year fixed effects	Yes	Yes
Bank fixed effects	Yes	Yes

5.2. CEO characteristics

Our results provide strong evidence that ethnically diverse boards tend to report timelier LLP. However, I have not considered CEO characteristics that could also affect LLP reporting. Previous literature strongly suggests that CEOs have a significant impact on firms' reporting decisions (Clinch and Magliolo, 1993, Balsam, 1998, Gaver and Gaver, 1998, Abdel-Khalik, 2007, Laux and Laux, 2009, Hazarika et al., 2012, Shalev et al., 2013, Lin et al., 2014, Ali and Zhang, 2015, Manchiraju et al., 2016). Hence, I control for CEO characteristics that previous

literature suggests influence reporting decisions, such as CEO power and CEO risk appetite. CEOs with more power can significantly influence board decisions (Finkelstein and D'aveni, 1994, Westphal and Zajac, 1995, Bebchuk and Spamann, 2009), while CEOs' appetite towards risk has a significant effect on their accounting choices (Abdel-Khalik, 2007, Ahmed and Duellman, 2013). Specifically, I use *CEO compensation*, *CEO age*, and *CEO gender*. All CEO-related variable definitions are provided in Appendix A. Higher CEO compensation can indicate higher CEO power (Grinstein and Hribar, 2004, Bebchuk and Spamann, 2009), and lower tolerance of risk (Otto, 2014, Bolton et al., 2015). Older CEOs are more risk averse, and more experienced (Serfling, 2014, Andreou et al., 2017). Finally, previous studies suggest that female CEOs are more risk averse (Ho et al., 2015, Palvia et al., 2015, Faccio et al., 2016, Skała and Weill, 2018).

We use ExecuComp to collect data related to CEO characteristics. Table 3-6 reports the results of the main regression after adding CEO controls. Due to missing data related to CEOs in ExecuComp, my sample size drops to 4,685 observations. The results are consistent with my main findings. The coefficient on the interaction terms *Change in* NPL_{t+1} * *Non-Caucasian NED %* and *Change in* NPL_{t+1} * *Non-Caucasian audit* are still positive and significant at the 1% level in the full sample. In the high versus low default risk analysis, my results are consistent with the results previously reported, confirming that diverse boards in banks with high default risk report timelier LLP than non-diverse banks. Also, *Change in* NPL_t is positive and significant at the 1% level in all models, indicating that non-diverse boards (audit committees) incorporate current changes in NPL in their reported LLP. Further, the interaction terms *Change in* NPL_t * *Non-Caucasian NED %* and *Change in* NPL_t * *Non-Caucasian audit* are insignificant in all the models, suggesting that there is no difference between the two groups (diverse and non-diverse boards) in terms of incorporating current changes in NPL in their reported LLP. Hence, my inferences are consistent with my conclusions in the main analysis. Finally, I repeat all my analyses in this section using CEO fixed effects to rule out omitted variable bias related to CEO time-invariant characteristics, and the results yield quantitatively similar results.

Table 3-6 *CEO characteristics*

This table reports the results obtained after adding CEO controls to the main model. Specifically, I add *ln CEO compensation*, *CEO age*, and *CEO gender*. Columns 1-6 report the results of using *Non-Caucasian NED %* as the diversity measure, while columns 7-12 show the results of using *Non-Caucasian audit* as the diversity measure. Columns 1, 2, 7, and 8 report the results of the full sample analysis, columns 3, 4, 9, and 10 those of the low-default-risk subsample, and columns 5, 6, 11 and 12 those of the high-default-risk subsample. High-default-risk banks are banks with Z-scores below the sample median, while low-default-risk banks are banks with Z-scores above the sample median. The Z-score is calculated as $\frac{ROA+Capital}{\sigma\ ROA}$. All variable definitions are given in Appendix A. For brevity, I report the variables of interest only, with the main ones written in bold. Quarter-year fixed effects and all control variables are included in all the models. Bank fixed effects are used in columns 1, 3, 5, 7, 9, and 11, while CEO fixed effects are used in columns 2, 4, 6, 8, 10, and 12. Robust standard errors are shown in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Non-Caucasian NED %						**Non-Caucasian audit**			
VARIABLES	Full sample		Low default risk		High default risk		Full sample		Low default risk		High default risk	
Change in NPL $_{t+1}$	0.00242	0.00113	0.0143	0.0170	-0.00977	-0.0159	-0.00456	-0.00599	0.0195	0.0220	-0.0200	-0.0269**
	(0.0113)	(0.0109)	(0.0141)	(0.0140)	(0.0131)	(0.0125)	(0.0109)	(0.0105)	(0.0141)	(0.0137)	(0.0121)	(0.0118)
Change in NPL $_{t}$	0.0856***	0.0841***	0.0806***	0.0823***	0.0886***	0.0796***	0.0879***	0.0837***	0.0806***	0.0813***	0.0927***	0.0800***
	(0.0175)	(0.0174)	(0.0153)	(0.0155)	(0.0216)	(0.0222)	(0.0189)	(0.0192)	(0.0158)	(0.0161)	(0.0243)	(0.0254)
Change in NPL $_{t+1}$ * Non-Caucasian NED % $_{t}$	**0.214*** **	**0.188*** **	**0.133**	**0.105**	**0.240***	**0.252***						
	(0.0802)	**(0.0720)**	**(0.115)**	**(0.120)**	**(0.135)**	**(0.128)**						
Change in NPL $_{t}$ * Non-Caucasian NED % $_{t}$	**0.168**	**0.139**	**-0.117**	**-0.136**	**0.213**	**0.216**						
	(0.131)	**(0.128)**	**(0.0986)**	**(0.0983)**	**(0.151)**	**(0.158)**						
Change in NPL $_{t+1}$ * Non-Caucasian Audit $_{t}$							**0.0678*** **	**0.0622*** **	**0.0161**	**0.00990**	**0.0804*** **	**0.0830*** **
							(0.0185)	**(0.0179)**	**(0.0223)**	**(0.0231)**	**(0.0239)**	**(0.0233)**
Change in NPL $_{t}$ * Non-Caucasian Audit $_{t}$							**0.0331**	**0.0329**	**-0.0279**	**-0.0308**	**0.0388**	**0.0471**
							(0.0268)	**(0.0270)**	**(0.0198)**	**(0.0205)**	**(0.0312)**	**(0.0326)**
ln CEO compensation $_{t}$	-0.00005	0.0000	-0.00007	-0.00007	0.00004	0.000134	-0.00004	0.0000	-0.00007	-0.00007	0.00004	0.000139
	(0.00005)	(0.00005)	(0.00004)	(0.00005)	(0.00008)	(0.00009)	(0.00005)	(0.00006)	0.00004	(0.00005)	0.00008)	(0.00009)
CEO age $_{t}$	0.0000	0.000143	0.0000	0.000108	0.0000	0.000110	0.0000	0.000137	0.0000	0.000111	0.0000	0.00008
	(0.0000)	(0.00012)	(0.0000)	(0.00012)	0.0000	(0.00015)	(0.0000)	(0.00012)	(0.0000)	(0.00012)	(0.0000)	(0.00015)
CEO gender $_{t}$	0.000276	Omitted	-0.00023*	Omitted	0.00109	Omitted	0.000327	Omitted	-0.000210	Omitted	0.00118	Omitted
	(0.00087)		(0.00012)		(0.00166)		(0.00087)		(0.00013)		(0.00163)	

Observations	4,685	4,685	2,343	2,342	2,342	2,343	4,685	4,685	2,343	2,342	2,342	2,343
R-squared	0.765	0.735	0.628	0.611	0.767	0.724	0.766	0.736	0.627	0.610	0.769	0.725
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
CEO fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

5.3. Financial expertise of the board

Furthermore, the financial expertise of the board members plays an important role in the board's monitoring of the financial reporting policies of the bank. Thus, if non-Caucasian directors are selected into banks with more financial experts on their board of directors, my results will be driven by omitted variable bias. Since data on financial expertise are unavailable for the period between 1996 and 2006, I restrict my analysis to the period of 2007 to 2017. The results are reported in columns 1 and 2 of Table 3-7. These results do not differ from those reported earlier. In particular, the level of significance of the interaction term *Change in* NPL_{t+1} * *Non-Caucasian NED %* increases from 5% to 1%, ruling out the likelihood that the effect of financial expertise on the board of directors drives my results. Moreover, I extend my analysis by using the percentage of financial experts on the audit committee. The results, reported in columns 3 and 4, are not affected by this change. In untabulated analysis, I control for the financial expertise of the non-Caucasian directors. My results remain similar to those of my main analysis.

5.4. The presence of a risk committee in the board

An alternative explanation for my findings is that a board with non-Caucasian directors might be better informed about bank risks than other boards. Such awareness is likely to result in reporting timelier LLP. In other words, if non-Caucasian directors are self-selected into firms with better risk control, my results are likely to be biased. Since non-Caucasian members are risk averse, it is possible that they are recruited into firms with increased risk awareness. Thus, I control for board risk awareness by controlling for the presence of a separate risk committee in the board of directors, or an asset quality or similar committee[17].

We obtain data about board committees from BoardEx. Given that BoardEx coverage between 1999 and 2002 is poor, I follow Ellul and Yerramilli (2013) and start my data collection from 2003. Then, I manually match each observation in BoardEx with the observations in my dataset using the bank's legal name. Due to missing data, my sample size drops to 3,382 observations. As shown in column 5 of Table 3-7, the interaction term *Change in* NPL_{t+1} * *Non-Caucasian NED %* remains significant. Similarly, as seen in column 6, the interaction term *Change in* NPL_{t+1} * *Non-Caucasian audit* is still positive and significant at the 1% level. Therefore, my results remain largely unchanged.

[17] Other similar committees might include credit quality, loan quality, or assets and liabilities committees.

5.5. Information environment

Banks with a high-quality information environment may be associated with better reporting quality. A more transparent information environment reduces the cost of acquiring information and hence allows external stakeholders and the board of directors to better monitor the executives (Duchin et al., 2010). Consistent with this finding, Duchin et al. (2010) report that outside directors are more effective in their monitoring duties for firms with low information costs. We, therefore, control for information environment characteristics at the bank level to alleviate the concern that they bias my results. I follow Duchin et al. (2010) and create an information cost index, which consists of three measures.

Our first measure is the dispersion of analysts' forecasts. I expect the deviation in analysts' forecasts to be high under a high-information-costs environment. Therefore, the standard deviation of analysts' forecasts prior to a quarterly earnings announcement is used. My second measure is the analyst forecast error. A large forecast error indicates a poor information environment, and hence a high information cost. I measure analyst forecast error as the mean of the absolute value of analysts' forecast error. My third measure is the number of analysts following. Analysts, as financial and industry experts, act as an important source of information for the capital markets, hence reducing information costs (Duchin et al., 2010, Krishnaswami and Subramaniam, 1999). Therefore, I postulate that the information cost is negatively associated with the number of analysts. I construct this measure by dividing one by the number of analyst forecasts. Therefore, this measure is positively associated with the information cost. Finally, I create my index by averaging the percentile ranks of the three measures. For simplicity, I multiply the index by 100.

We obtain analyst data from the I/B/E/S database. After matching the data acquired from I/B/E/S with my dataset, my sample size drops from 5,109 to 4,825 observations due to missing observations related to my information cost index. Table 3-7 reports the results of this analysis. Columns 7 and 8 show that the coefficients on the interaction terms Change in NPL_{t+1} * Non-Caucasian NED % and Change in NPL_{t+1} * Non-Caucasian audit are still positive and significant in the full sample, consistent with my main analysis. I also change the model specifications and include each information cost proxy as a control variable in the model. Overall, the results are consistent with my hypothesis and show that ethnically diverse boards are associated with timelier LLP reporting, especially during times of financial distress.

Table 3-7 *Robustness tests*

This table reports the results of various robustness tests. *Diversity* in table 3-7 represents one of the two diversity measures: *non-Caucasian NED %* and *non-Caucasian Audit*. Columns 1, 3, 5, and 7 report the results from using *Non-Caucasian NED %* as the diversity measure, while I use *Non-Caucasian audit* as the diversity measure in columns 2, 4, 6, and 8. The results from controlling for the percentage of financial experts on the board of directors are reported in columns 1 and 2, while columns 3 and 4 report the results of using the percentage of financial experts on the audit committee as a control variable. Columns 5 and 6 report the results after controlling for the presence of a risk committee. Finally, columns 7 and 8 report the results of controlling for the information environment of the bank. All variable definitions are provided in Appendix A. For brevity, I report the variables of interest only, with the main ones written in bold. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all the models. Robust standard errors are shown in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

VARIABLES	**(1)** **Non-Caucasian NED %** **Financial expertise of the board**	**(2)** **Non-Caucasian audit** **Financial expertise of the board**	**(3)** **Non-Caucasian NED %** **Financial expertise of the AC**	**(4)** **Non-Caucasian audit** **Financial expertise of the AC**	**(5)** **Non-Caucasian NED %** **Risk committee analysis**	**(6)** **Non-Caucasian Audit** **Risk committee analysis**	**(7)** **Non-Caucasian NED %** **Information environment**	**(8)** **Non-Caucasian Audit** **Information environment**
Change in NPL $_{t+1}$ * Diversity $_t$	**0.331*** **	**0.0861*** **	**0.330*** **	**0.0864*** **	**0.242***	**0.0586*** **	**0.1730** **	**0.0585*** **
	(0.126)	**(0.0237)**	**(0.126)**	**(0.0236)**	**(0.128)**	**(0.0223)**	**(0.0859)**	**(0.0178)**
Change in NPL $_t$ * Diversity $_t$	**0.0717**	**0.0244**	**0.0719**	**0.0242**	**0.126**	**0.0334**	**0.0687**	**0.0223**
	(0.134)	**(0.0271)**	**(0.134)**	**(0.0271)**	**(0.126)**	**(0.0259)**	**(0.1279)**	**(0.0259)**
Financial expertise of the board $_t$	0.000809**	0.000744*						
	(0.000394)	(0.000392)						
Financial expertise of the AC $_t$			0.000270*	0.000228				
			(0.000153)	(0.000148)				
Risk committee $_t$					0.00004	0.00005		
					(0.00006)	(0.00006)		
Information environment index $_t$							0.000	0.000
							0.000	0.000
Observations	2,786	2,786	2,786	2,786	3,382	3,382	4,825	4,825
R-squared	0.835	0.836	0.835	0.836	0.829	0.829	0.773	0.774

Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

6. Additional analysis

6.1. Idiosyncratic risk and the timeliness of LLP

The main analysis uses the Z-score as a measure of risk, an accounting-based measure. To ensure the robustness of my findings, I replace the Z-score with idiosyncratic risk, a market-based measure of risk. Idiosyncratic risk is measured as the volatility of the bank-specific stock return. Thus, it captures the market assessment of the risk inherent in a bank's operations. Idiosyncratic risk increases with the volatility of bank-specific returns.

We obtain daily stock returns data from CRSP and estimate the following model:

$$Stock\ returtn_{it} = \theta_0 + \theta_1 Market\ return_{t+2} + \theta_2 Market\ return_{t+1} + \theta_3 Market\ return_t + \theta_4 Market\ return_{t-1} + \theta_5 Market\ return_{t-2} + \mu_{it} \quad \text{.....(2)}$$

where *Stock return*$_{it}$ is the stock return on day *t* for bank *i,* and *Market return*$_t$ is the return on the CRSP value-weighted market index on day *t*. I use lagged and lead variables for the market return to account for non-synchronous trading (Dimson, 1979, Kim and Zhang, 2016). The residual in model 2, denoted by μ, represents the daily bank-specific stock return. I construct the idiosyncratic risk variable as the standard deviation of the residuals for each quarter. Finally, I divide my sample into high-risk banks and low-risk banks based on the idiosyncratic risk median.

Table 3-8 reports the findings of this analysis. My results remain largely the same. The coefficients on the interaction terms *Change in NPL*$_{t+1}$ * *Non-Caucasian NED %*$_t$ (*Change in NPL*$_{t+1}$ * *Non-Caucasian audit*$_t$) are positive and significant in the high-risk-bank sample, while they are positive but insignificant in the low-risk-bank sample. This finding emphasises my earlier result that ethnically diverse boards become more effective during periods of financial distress.

Table 3-8 *Comparison between banks with high and low idiosyncratic risk*

This table shows the results of my analysis when I divide the full sample into banks with high and low idiosyncratic risk. Banks with high idiosyncratic risk are those with idiosyncratic risk above the sample median, while those with low idiosyncratic risk are those with idiosyncratic risk below the sample median. Idiosyncratic risk is calculated using market model regression. All other variables are explained in Appendix A. Columns 1 and 3 show the results when using *Non-Caucasian NED* % as the diversity measure, while I use *Non-Caucasian audit* as the diversity measure in columns 2 and 4. For brevity, I report the variables of interest only, with the main ones written in bold. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all the models. Robust standard errors are presented in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

	Banks with low idiosyncratic risk		**Banks with high idiosyncratic risk**	
VARIABLES	(1) **Non-Caucasian NED %**	(2) **Non-Caucasian audit**	(3) **Non-Caucasian NED %**	(4) **Non-Caucasian audit**
Change in NPL $_{t+1}$	0.00795	0.0108	-0.0142	-0.0212
	(0.0150)	(0.0145)	(0.0168)	(0.0156)
Change in NPL $_{t+1}$ * Non-Caucasian NED % $_t$	**0.101**		**0.284****	
	(0.108)		**(0.130)**	
Change in NPL $_t$	0.0238**	0.0284***	0.102***	0.0980***
	(0.0104)	(0.00937)	(0.0260)	(0.0274)
Change in NPL $_t$ * Non-Caucasian NED % $_t$	0.102		0.0690	
	(0.129)		(0.156)	
Change in NPL $_{t+1}$ * Non-Caucasian audit $_t$		**0.0105**		**0.0823*****
		(0.0185)		**(0.0245)**
Change in NPL $_t$ * Non-Caucasian audit $_t$		0.00742		0.0244
		(0.0190)		(0.0334)
Observations	2,447	2,447	2,448	2,448
R-squared	0.642	0.641	0.761	0.762
Other controls	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes

6.2. Number of ethnic groups

The main analysis suggests that the timeliness of LLP is improved with the increase in non-Caucasian independent directors and non-Caucasian audit committee members. However, it is unclear whether increasing the number of minority groups (i.e. African, Hispanic, or Asian) represented is also beneficial.

According to resource dependence theory, diverse boards benefit from the variety of viewpoints provided in the boardroom by directors from different ethnicities. This argument

implies that increasing the number of ethnic groups on the board is likely to improve its effectiveness. On the other hand, increasing diversity might lead to increased conflict on the board, and hence deteriorate its performance (Berger and Bouwman, 2013). To illustrate, assume that there is a board with ten directors, of whom two are non-Caucasian. Resource dependence theory suggests that the board will be more effective if the two non-Caucasian members are from two different ethnic groups. On the other hand, conflict theory would suggest that the board will be less effective in this scenario because conflicts of opinions are likely to increase. I investigate this issue more in this section of the paper. Hence, I introduce a variable counting the *Number of ethnic groups* among the independent board (audit committee) members[18]. Because the only ethnicity categories in my sample are Caucasian, African, Asian, and Hispanic, the *Number of ethnic groups* variable will take values between one and four. The results indicate that the larger is the number of ethnic groups, the stronger is the LLP timeliness, supporting the view of resource dependence theory (untabulated).

Next, I introduce three dummy variables indicating the number of ethnic groups on the board[19]. The results are reported in Table 3-9. Panel A investigates the effect of number of ethnic groups of the *board* on LLP reporting, while Panel B focuses on the *audit committee*. The findings suggest that 'too much' diversity might have adverse consequences for board (audit committee) effectiveness. Panel A reports the analysis

Generally, the results suggest that the optimal number of ethnic groups is between two and three for the board of directors and two for the audit committee. On the other hand, I find some evidence of delayed LLP recognition when four different groups are represented on the board of directors, which supports the view of conflict theory. Generally, my evidence suggests that the relationship between board ethnic diversity and monitoring effectiveness is nonlinear.

[18] For instance, if a board of 10 independent members consists of 7 Caucasians, 2 Asians, and 1 African, the *Number of ethnic groups* variable will equal 3 (Caucasian + Asian + African).
[19] Specifically, I construct the dummy variables *2 Ethnic groups*, *3 Ethnic groups*, and *4 Ethnic groups*. All variable definitions are provided in Appendix A.

Table 3-9 *Analysis of total number of ethnic groups among independent directors on the board and audit committee*

This table reports the results of the analysis of the total number of ethnic groups represented among independent directors on the board (audit committee). This table uses the dummy variables for two, three or four ethnic groups. Directors' ethnic groups are classified as Caucasian, African, Hispanic, or Asian. Panel A reports the results for the independent board directors, while panel B reports the results for the audit committee. All variable definitions are available in Appendix A. For brevity, I report the variables of interest only, with the main ones written in bold. Quarter-year fixed effects, bank fixed effects, and all control variables are included in all the models. Robust standard errors are presented in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Panel A – Total number of ethnic groups among independent directors.

VARIABLES	(1) 2 Ethnic groups only	(2) 3 Ethnic groups only	(3) 4 Ethnic groups only	(4) Full sample
Change in NPL $_{t+1}$ * 2 Ethnic groups $_t$	**0.0345***			**0.0465****
	(0.0189)			**(0.0198)**
Change in NPL $_{t+1}$ * 3 Ethnic groups $_t$		**0.0529**		**0.0758****
		(0.0368)		**(0.0383)**
Change in NPL $_{t+1}$ * 4 Ethnic groups $_t$			**0.0168**	**0.0489**
			(0.0381)	**(0.0377)**
Change in NPL $_t$ * 2 Ethnic groups $_t$	**0.0568****			**0.0624****
	(0.0282)			**(0.029)**
Change in NPL $_t$ * 3 Ethnic groups $_t$		**0.00926**		**0.0352**
		(0.0478)		**(0.0508)**
Change in NPL $_t$ * 4 Ethnic groups $_t$			**-0.0971*****	**-0.0651****
			(0.0271)	**(0.0295)**
Observations	5,109	5,109	5,109	5,109
R-squared	0.768	0.766	0.767	0.77
Other controls	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes

Panel B – Total number of ethnic groups in Audit committee.

VARIABLES	(1) 2 Ethnic groups only	(2) 3 Ethnic groups only	(3) 4 Ethnic groups only	(4) Full sample
Change in NPL $_{t+1}$ * 2 Ethnic groups $_t$	**0.0600*** **			**0.0632*** **
	(0.0204)			**(0.0205)**
Change in NPL $_{t+1}$ * 3 Ethnic groups $_t$		**0.0328**		**0.0557**
		(0.0595)		**(0.0586)**
Change in NPL $_{t+1}$ * 4 Ethnic groups $_t$			**0.0411**	**0.0648**
			(0.0493)	**(0.0518)**
Change in NPL $_t$ * 2 Ethnic groups $_t$	**0.0620** **			**0.0654** **
	(0.0259)			**(0.026)**
Change in NPL $_t$ * 3 Ethnic groups $_t$		**0.0260**		**0.049**
		(0.0716)		**(0.0718)**
Change in NPL $_t$ * 4 Ethnic groups $_t$			**-0.189*** **	**-0.165** **
			(0.0635)	**(0.0644)**
Observations	5,109	5,109	5,109	5,109
R-squared	0.769	0.766	0.766	0.77
Other controls	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes

7. Conclusion

Although the effect of gender diversity on corporate decisions has been investigated extensively, evidence is scarce on how directors' ethnicities influence corporate decision making. My study investigates the effect of ethnic diversity on financial statement transparency in banks. Specifically, I argue that banks with ethnically diverse boards are associated with enhanced financial statement transparency, as manifested by the timeliness of LLP reporting. I use a large sample of US banks listed on the S&P1500 for the period between 1996 and 2017, and my initial findings support my argument. I also find that diverse boards in banks with high default risk tend to report more conservatively. Hence, I suggest that the effect of ethnically diverse boards is more apparent during periods of higher risk. My results hold after accounting for omitted variable bias related to time-invariant characteristics, by controlling for bank fixed effects, CEO characteristics, CEO fixed effects, different types of board structure, and quality of banks' information environment, and after accounting for self-selection bias by creating a matched sample using propensity score matching. In an extended

analysis, I find that increasing the number of ethnic groups represented on the board of directors has a concave effect on reporting quality.

We contribute to the literature in several ways. First, I show that ethnic diversity has a positive effect on the monitoring of banks' financial reporting quality, especially during difficult periods. Second, although the representation of ethnic minorities on corporate boards is increasing, little attention has been given to its effect on corporate decision making. I attempt to fill this gap in the literature by showing the impact of ethnically diverse boards on financial reporting quality in banks. Finally, my study also has some practical implications, as it indicates that the recent call for more ethnic diversity on boards of directors is likely to have a positive effect on firms' financial reporting quality, especially during periods of financial distress. I encourage future studies to investigate the effect of ethnic diversity on firm risk, as this area appears to be widely unexplored.

Chapter 4:Age diversity and earnings management in the banking sector

Abstract

We investigate how age diversity on corporate boards affects financial reporting quality. In spite of the critical importance of monitoring, previous studies, to the best of my knowledge, focus solely on the advisory role played by age-diversified boards. I focus on banks, where it is particularly difficult for external observers to assess performance and thus they must rely on the board for monitoring. Using a large panel dataset of banks in the United States (n=7,005), I show that age-diversified boards are associated with less earnings management, as proxied by discretionary loan loss provisions (DLLPs). My results are statistically and economically significant and remain robust after I control for various bank, board, and Chief Executive Officer (CEO) characteristics. I also control for self-selection bias by implementing the propensity-score-matching technique. Moreover, a quantile regression analysis reveals that, as age diversity increases, the strength of the monitoring effectiveness increases. My findings enlighten the contemporary debate on the effect of board diversity on boards' actions.

1. Introduction

Corporate governance codes and regulations around the globe emphasise the importance of diversity for board effectiveness. For instance, the Securities and Exchange Commission (SEC) in the United States (US) requires listed companies to disclose their diversity strategies (Securities and Exchange Commission, 2009), while Australia requires listed companies to disclose a diversity policy (Australian Securities Exchange, 2010). Banking regulators also emphasise the importance of diversity. The Basel Committee on Banking Supervision (2015) explicitly specifies that the complex nature of banking operations calls for banks' boards to include a diverse set of directors. While much attention has been directed towards gender diversity, other forms of diversity have often been overlooked. Although nearly 90% of directors of firms in the S&P500 consider age diversity important, only 6% of S&P500 firms have directors younger than 50 years old (PricewaterhouseCoopers, 2019). Given this, I examine how age diversity affects one of the roles of corporate boards – monitoring the quality of firms' financial reports.

We chose to investigate the banking industry for a number of reasons. First, the opacity and complexity of bank operations makes it challenging for external stakeholders to monitor bank activities (Acharya and Ryan, 2016). Hence, bank boards have an even more significant monitoring role than boards of non-financial firms. Second, governments pay specific attention to the banking industry due to its substantial impact on the economy. Banks facilitate borrowing by acting as intermediaries between borrowers and lenders and, as such, policymakers have been particularly interested in ensuring the safety and soundness of

banking systems. It is no wonder that board characteristics – the first line of defence against industry instability – are also receiving increasing attention from researchers (Laeven and Levine, 2009, Adams and Mehran, 2012).

We decided to focus on age diversity and its relations with banks' quality of reporting. Research shows that individuals' preferences and decision-making processes change as they age (Huang et al., 2012, Serfling, 2014, Andreou et al., 2017). Thus, I postulate that increasing age diversity in banks' boards could have a positive impact on the quality of the reports the banks produce, as age diversity enhances board independence (Adams and Ferreira, 2009) and improves the quality of board discussions by introducing different views (Arfken et al., 2004).

We focus on the quality of reporting as an indicator of the quality of the operation of banks' boards. Since banking operations are complex and opaque (Cetorelli et al., 2014, Bratten et al., 2019), financial reporting plays a vital role in communicating information to external stakeholders (Bushman and Williams, 2012). Following banking literature, I use loan loss provision (LLP) as my measure of earnings management, indicative of the quality of reporting (Kanagaretnam et al., 2005, Bushman and Williams, 2012, Kanagaretnam et al., 2014, Fan et al., 2019).

We make several contributions to the literature. First, I contribute to the limited literature on the effect of age diversity on boards' monitoring performance. I believe that this study provides the first evidence in the literature on the effect of age diversity on financial reporting quality. Prior research on age diversity documents mixed results with regards to the association between age diversity and firm performance (Talavera et al., 2018, Ali et al., 2014), while showing that age diversity has a negative association with risk taking (Bernile et al., 2018, Zhou et al., 2019). I document a positive association between the age diversity of the board and financial reporting quality. In particular, I find that board age diversity reduces earnings management.

Our results also contribute to the literature on the effect of board diversity in banks. The Basel Committee on Banking Supervision (2015) states that the complex nature of bank activities should encourage banks to consider diversifying their boardrooms. However, the evidence on diversity in banks is still limited. I contribute to this literature by providing evidence on the effect of age diversity on the effectiveness of board monitoring. My results complement those of Fan et al. (2019), who find that gender diversity reduces earnings management in banks. In line with their findings, my results emphasise the importance of board diversity in banks in reducing earnings management, and support the Basel Committee's view that diversity enhances board performance. My findings are particularly important because age diversity is

often overlooked by both academics and practitioners. An important distinction between age diversity and gender diversity is that gender differences represent genetic and cultural differences (Wahid, 2018, Francis et al., 2015, Gul et al., 2013), while age diversity represents diversity in life experience (Hagendorff and Keasey, 2012).

Third, as banks' financial reports are opaque (Beatty and Liao, 2014, Acharya and Ryan, 2016), both academics and policymakers examine the factors that affect financial reporting transparency in banks. This literature reveals that board independence (Cornett et al., 2009), ownership structure (Bushman et al., 2017), managerial overconfidence (Black and Gallemore, 2013), competition (Jiang et al., 2016), and operational diversification (Tran et al., 2019a), among other characteristics, affect financial reporting quality in banks. I argue that cognitive conflict triggered by age diversity improves boards' monitoring performance. Given that earnings management is the intentional manipulation of earnings (Dechow et al., 2010a, Dechow et al., 2010b, Cohen et al., 2014, Bushman and Williams, 2012)[20], its presence lowers earnings quality. Hence, my findings extend bank accounting literature by documenting that the age diversity of the board is a factor that improves reporting transparency in banks.

Fourth, ample evidence is available on the economic consequences of financial misreporting for banks. The evidence suggests that financial misreporting of LLP might have a devastating effect on banks. For instance, banks that manage LLP reporting are less able to lend during periods of economic downturn (Akins et al., 2017), have increased systematic and stock market risks (Bushman and Williams, 2015), and are more likely to default during a financial crisis (Jin et al., 2018). However, only a limited number of studies investigate the reasons behind heterogeneity in LLP reporting in the first place (Nicoletti, 2018). I show that the board structure contributes to the observed heterogeneity in financial reporting quality in banks.

The remainder of this paper is organised as follows. Next, I review the related literature and develop my hypothesis. The third section presents my methodology, while Section 4 reports the results. I conclude in Section 5.

2. Literature review and hypothesis development

2.1. Diversity and board effectiveness

It is widely recognised that one of the most important functions of the board is to monitor managers and ensure that they act in the best interests of the shareholders, and a large stream

[20] As earnings management is the intentional manipulation of earnings for purposes other than the fair representation of economic performance, I regard it as a practice that contributes to opacity in banks' financial reporting.

of corporate governance literature focuses on how board structure improves board effectiveness (Ryan Jr and Wiggins III, 2004, Duchin et al., 2010, Kim and Lim, 2010).

In the same vein, academics and policymakers suggest that board effectiveness can be enhanced through increasing the demographic diversity of the board directors. First, it is argued that diverse boards will increase board effectiveness by bringing a wide range of diverse experiences and perspectives to the board. Directors from different demographic backgrounds transmit different experiences and knowledge to the board (Hillman et al., 2000), which helps extend the board's awareness, and promotes fruitful discussions. Consistent with this argument, McLeod et al. (1996) find that diverse groups are more likely to produce higher-quality ideas than homogeneous groups, while both Miller and del Carmen Triana (2009) and Bernile et al. (2018) find that firms with diverse boards are more innovative. Second, while board diversity may contribute to slower and less effective decision making (Forbes and Milliken, 1999, Lau and Murnighan, 2005, Campbell and Mínguez-Vera, 2008, Berger et al., 2014), boards whose directors have similar demographic attributes are less likely to be independent, as similar board members are more likely to establish social ties, which will inhibit the expression of differing opinions. Thus, diverse boards are more likely to encourage conflict between directors, leading to increased board independence and improved effectiveness (Fan et al., 2019, Bernile et al., 2018).

2.2. Age diversity: Empirical evidence

Age is a very important demographic attribute that influences individuals' decision-making processes (Taylor, 1975, Deakin et al., 2004, Yim, 2013, Peltomäki et al., 2018). For instance, older directors act more responsibly towards the welfare of the society (Siciliano, 1996, Hafsi and Turgut, 2013), make more conservative decisions (MacCrimmon and Wehrung, 1990, Bertrand and Schoar, 2003, Campbell, 2006, Gorton and Huang, 2006), and are more experienced (Aggarwal et al., 2008, Li et al., 2011). On the other hand, younger directors tend to be more motivated to work (Mishra and Jhunjhunwala, 2013), highly educated (Hatfield, 2002), and overconfident (Forbes, 2005).

Given this, age diversity may positively influence board effectiveness. In an age-diversified board, for instance, board performance can be enriched by old directors' practical experience, while the young directors may work more energetically (Mishra and Jhunjhunwala, 2013, Taylor, 1975). Ali et al. (2014) suggest that the effect of age diversity on firm performance is nonlinear. They find that age diversity has an inverted U-shaped relationship with firms' return on assets. Moreover, Kim and Lim (2010) have found that age diversity is associated with an increase in firm valuation. Li et al. (2011) find that age diversity is associated with improved

performance in Chinese and Western firms, but do not find similar evidence for East Asian firms. Finally, Zhou et al. (2019) find that the larger is the age gap between the chairman and the CEO, the lower is the bank's risk taking, due to more effective risk monitoring.

Studies also show, however, negative impacts of age-diversified boards. Hagendorff and Keasey (2012) find that banks with age-diverse boards tend to have reduced stock market performance after investments in mergers and acquisitions. They argue that shareholders prefer experience to diversity in contexts of complex decision making such as acquisitions. Talavera et al. (2018) report a negative association between age diversity and banks' return on assets and return on equity.

Importantly, none of the previous studies specifically investigates the effect of age diversity on the monitoring function of the board, as it is reflected in financial reporting quality. A more focused examination would be illuminating as, while earnings convey crucial information about firm performance, managers may distort earnings to avoid being dismissed from their jobs or to increase their compensation. Thus, this study aims to extend this literature by investigating the association between age diversity and earnings management in banks.

2.3. Hypothesis development

One of the widely used methods of managing earnings in banks is through LLP reporting (Beatty and Liao, 2014, Cohen et al., 2014, Curcio and Hasan, 2015, Barth et al., 2017, Jin et al., 2018, Fan et al., 2019). LLP is highly discretionary because it depends on the managers' estimation of future credit losses. While managers have access to private information related to loan quality, it is challenging for external stakeholders to access such information (Bushman and Williams, 2012). Managers can take advantage of this information asymmetry and misreport LLP (Richardson, 2000). However, effective boards should preclude managers from gaining this advantage. Non-executive directors have a number of mechanisms through which to verify managers' judgment. Unlike shareholders, directors have access to loan data and thus have the ability to validate managers' estimations.

As discussed earlier, the literature indicates that age-diversified boards are more independent and have more varied knowledge, which are generally linked with more effective monitoring. As discussed, both the encouragement of cognitive conflicts in board discussions (Bernile et al., 2018, Wahid, 2018, Talavera et al., 2018, Zhou et al., 2019) and having a variety of perspectives on the issues raised (Krahn and Galambos, 2014, Ali et al., 2014, Andreou et al., 2017) may contribute to more productive discussion and improved board decision making. For example, age-diversified boards are more likely to challenge managers' judgments on LLP reporting, leading to improved quality of reporting.

Hypothesis: Age-diversified boards are associated with less discretionary earnings management in banks.

3. Data and methodology

3.1. Sample and data

We use COMPUSTAT to collect LLP-related data, along with other accounting data. I obtain directors' ages, along with other board characteristics, using Institutional Shareholder Services (ISS). The data available on ISS starts in 1996. Therefore, my sample consists of US banks for the period between 1996 and 2018. I also use ExecuComp to collect data on CEO compensation. I merge the databases using six-digit CUSIP. Then, I omit observations with missing LLP, age diversity, bank, or board characteristics data. My final sample consists of 7,005 observations. The total number of banks included in my study is 232. Due to some missing CEO characteristics data, my sample size drops to 5,915 observations (188 banks) when I include CEO control variables. Therefore, due to the substantial loss of observations, I exclude the CEO controls from my base model but include them in an extended analysis.

3.2. Dependent variable: DLLP

Banking studies normally use discretionary loan loss provisions (DLLP) as a measure of discretionary earnings management (Kanagaretnam et al., 2010, Kanagaretnam et al., 2014, Beatty and Liao, 2014, Tran et al., 2019b, Fan et al., 2019). To distinguish between the discretionary component of LLP and the non-discretionary component, I implement Beatty and Liao (2014)'s model. In the first stage, this model regresses LLP on variables that are known to affect loan losses, while the second stage uses the first-stage estimates to calculate the residuals from the model estimates. The calculated residuals are regarded as the discretionary component of the reported LLP. Greater (lesser) residuals, in absolute terms, indicate a greater (lesser) degree of earnings management. The following model is used:

$$LLP_{it} = \alpha_0 + \alpha_1 Change\ in\ NPL_{it+1} + \alpha_2 Change\ in\ NPL_{it} + \alpha_3 Change\ in\ NPL_{it-1} + \alpha_4 Change\ in\ NPL_{it-2} + \alpha_5 ln\ Assets_{it-1} + \alpha_6 Change\ in\ loan_t + \text{Loan loss reserves} + \text{Charge} - \text{off} + \sum \text{Quarter fixed effects} + \varepsilon_{it} \quad \ldots\ldots (1)$$

where *LLP* is the loan loss provision of bank *i* at quarter *t*. *Change in NPL* is the change in non-performing loans over the quarter. Non-performing loans are loans for which the borrower fails to make interest payments for a defined period of time, normally 90 days. The model uses *Change in NPL* in the periods t+1, t, t-1, and t-2 to control for the fact that banks use future, current, and past information to estimate LLP (Bushman and Williams, 2012). *ln Assets* is the natural log of the book value of assets. Larger banks are scrutinised more by

regulators as they are 'too big to fail'. *Change in loan* is the change in total loans over the quarter. This variable captures the increase/decrease in the lending activities of the bank as LLP is expected to increase with an increase in loans (Kim and Kross, 1998). The model also uses *Loan loss reserves* to control for managers' adjustment to LLP over-reporting in previous periods (Beaver and Engel, 1996). Finally, *Charge-off* is used as it is an important loan metric that managers use to estimate LLP (Liu and Ryan, 2006). All variable definitions are provided in Appendix A. I run model 1 on the entire set of bank accounting data available on COMPUSTAT. Then, I generate my DLLP variable as the absolute value of the residuals estimated from model 1.

3.3. Main explanatory variable: Age diversity

Our key explanatory variable measures the age diversity of the board. An age-diversified board should have a higher discrepancy between the ages of its board members. I am particularly interested in the age diversity of nonexecutive directors, since they are the ones who carry out the monitoring role of the board. I follow Hagendorff and Keasey (2012) and Talavera et al. (2018) and measure age diversity as follows: the standard deviation of nonexecutives' ages, divided by their mean age. Then, I assign a value of 1 for observations with an age diversity coefficient above the sample median and 0 otherwise.

3.4. Research design

3.4.1 Base model

A fixed effects estimator is used to measure the effect of an age-diverse board on earnings management. An advantage of the fixed effects estimator is that it controls for unobserved time-invariant heterogeneity at the bank level, which allows me to attenuate the effect of omitted variable bias. The fixed effects estimator captures the net effect of age diversity on DLLP, after removing the effect of those time-invariant characteristics. To control for heteroskedasticity, I use Huber-White standard errors. I also cluster the standard errors at the bank level to control for potential estimation bias due to within-bank correlation. My baseline model is as follows:

$$DLLP_t = \beta_0 + \beta_1 Age\ diversity\ of\ NED_t + \sum Bank\ controls_t + \sum Board\ controls_t + \sum Quarter - year\ fixed\ effects + \sum Bank\ fixed\ effects + \epsilon_t \quad \text{.....(2)}$$

where $DLLP_t$ is the absolute value of the residuals estimated using model 1 in period t, and *Age diversity of NED*$_t$ is a variable that takes the value 1 if the age diversity of the nonexecutives is above the sample median and 0 otherwise, as described in the previous

section. I use the following bank-level controls. First, I use pre-managed earnings ($EBDLLP_t$) to control for the motivation to carry out earnings management. Previous studies show that managers are motivated to manage earnings when their pre-managed earnings are low (Bushman and Williams, 2012). I also use *Tier 1 capital* $\%_{t-1}$, to control for banks using LLP to manage their regulatory capital, a behaviour that is specific to the banking industry (Ahmed et al., 1999). I control for bank size using the lagged natural log of total assets *(ln* $Assets_{t-1}$*)*. Large banks are likely to have highly sophisticated internal controls (Doyle et al., 2007), and are subject to scrutiny from regulators (Michelson et al., 1995), lessening the managers' ability to manipulate earnings. Diversity in operations is also an important attribute that might affect banks' tendency to manage earnings. Diversification increases information asymmetry between insiders and outsiders, and hence increases the monitoring costs of the firm. Consistent with this argument, Tran et al. (2019a) find that diversified banks are more likely to use LLP to manage earnings. I consider a bank to be diversified when it is less reliant on its lending activities. Therefore, I use the ratio of loans over total assets to control for bank diversification *(Loan concentration*$_t$*)*. Also, relative to mature firms, growing firms have a higher propensity to manage earnings (Tran et al., 2019a). I follow previous studies and control for the effect of bank growth using *Assets growth* (Tran et al., 2019b, Fan et al., 2019).

As to my board-level controls, I use *Board size*$_t$ to control for board effectiveness. The direction of the relationship between board size and board effectiveness is unclear. Some studies suggest that large boards are more likely to have diversified experience and skills which enable them to better monitor bank activities (Coles et al., 2008, Adams and Mehran, 2012). I also control for board independence using *Nonexecutive directors* $\%_t$, *CEO/chairman duality*$_t$, and *Gender diversity* $\%_t$. Nonexecutive directors are not involved in day-to-day operations; hence, they are viewed as independent from executives and in a bank their main duty is to monitor the bank executives (Jensen, 1993). I also control for CEO/chairman duality as powerful CEOs may compromise board independence (Tuggle et al., 2010). The chairman sets the board agenda and facilitates the debate in the board. Therefore, executive chairmen can sway the board discussion in their favour. Chairmen also have considerable influence over directors' re-appointments (Carcello et al., 2011). Thus, directors will be discouraged from challenging their views. Finally, recent studies show that gender diversity increases board independence. Women directors are not considered part of the 'old boys' network' and do not have the tendency to form social ties with executives, so their presence ultimately enhances board effectiveness (Gul et al., 2013, Gull et al., 2018). Fan et al. (2019) show that bank boards with more women are associated with less earnings management, as measured by DLLP.

To alleviate the effects of omitted variable bias, I use bank fixed effects. Bank fixed effects control for unobservable characteristics related to time-invariant factors. I also use a vector of time dummies to control for time-variant characteristics that affect LLP reporting. Finally, ϵ_t denotes the error term.

3.4.2 Extended model

In an extended model, I control for CEO characteristics that might affect reporting quality. CEOs have a significant effect on financial reporting decisions (Dechow and Shakespear, 2009, Kim et al., 2011, Hribar and Yang, 2016). I specifically control for *CEO compensation*, *CEO age*, and *CEO gender*. Compensation plans might persuade CEOs to alter reported earnings, especially when their pay is more performance-sensitive (Laux and Laux, 2009). I use the natural log of CEO compensation (*ln CEO compensation*) to account for exponentiality in the relationship between compensation and earnings management. In addition, I control for *CEO age* and *CEO gender* because previous studies suggest that these factors could affect firms' financial reporting decisions (Huang et al., 2012, Ho et al., 2015).

4. Results

4.1. Univariate analysis

4.1.1 Dependent variable

Table 4-1 reports my descriptive statistics. With regards to my earnings management variable, the average |*DLLP*| in my sample is 0.0007, whereas the maximum is 0.0572. Note that DLLP represents the discretionary component of LLP deflated by lagged total loans. To make more sense of the actual size of my |*DLLP*|, I multiply the |*DLLP*| of each bank by its corresponding lagged total loans. In actual numbers, the average |*DLLP*| is $27 million and the maximum is $6 billion. I think that these numbers are material in size in comparison to earnings and LLP. Earnings before extraordinary items in my sample average at nearly $196 million, while the average LLP is approximately $94 million.

4.1.2 Age diversity

Based on the descriptive statistics reported in Table 4-1, I find that bank boards are older and less diversified than boards in non-financial industries. My descriptive statistics show that the average age of bank directors is 62 years. This is three years higher than in non-financial firms as reported by Bernile et al. (2018), who look at non-financial firms listed in the S&P1500 for

the period between 1996 and 2014[21]. Table 4-1 also shows that the standard deviation of the directors' age is 4.12, indicating a lack of age diversity in general.

With regards to my proxy for age diversity, my mean (median) is 0.109 (0.115), while the mean (median) in S&P1500 non-financial firms is 0.14 (0.14), as reported by Bernile et al. (2018). This demonstrates that, as with gender diversity, banks are lagging behind other industries in terms of the age diversity of their boards. Finally, I construct my *Age diversity of NED* variable as a dummy variable that equals 1 if the age diversity of the bank's nonexecutive directors is greater than or equal to the median (0.115), and 0 otherwise.

4.1.3 Bank, board, and CEO characteristics

The summary statistics of my bank-level control variables show that banks in my sample have an average *EBDLLP* of 0.005, whereas the highest (lowest) value in my sample is 0.261 (-0.126). In addition, banks in my sample average $82 billion of total assets. The largest bank in my sample has total assets of $2.615 trillion, the smallest $0.9 billion. The descriptive statistics also show that the average *Tier 1 capital %* is approximately 11%, while the maximum is 31.58%, indicating that, on average, banks in my sample are well-capitalised[22]. In terms of diversification of operations, my sample is varied. On average, banks in my sample hold a 62% loan-to-assets ratio. The average growth rate in assets is 2.5%, while the maximum (minimum) is approximately 140% (-40%). Overall, the descriptive statistics show that my sample contains banks with a variety of characteristics, supporting the generalisability of my findings.

Moving to the board characteristics, nonexecutive directors comprise 86% of banks' boards on average. In addition, consistent with the literature that indicates that bank boards are large, reflecting the complexity of bank operations (Adams and Mehran, 2012), my average board size is 12.8 directors. This is almost three directors more than the average board size that Bernile et al. (2018) report for non-financial firms. My smallest board has a total of five directors, while my largest has 30. In terms of gender diversity, the average representation of women among nonexecutive directors is 11.2%. Table 4-1 also shows that the average size of the audit committee is four directors, while approximately 22% of banks' chairmen are also the CEOs of these banks.

[21] I also want to mention that Bernile et al. (2018)'s average is calculated across all board members, while my variable covers nonexecutive directors only.
[22] The US federal bank regulator states that banks must hold at least a 4% tier 1 capital ratio to be considered *adequately capitalised*. For banks to be considered *well-capitalised*, they should hold at least a 6% tier 1 capital ratio.

Finally, I report the descriptive statistics for the CEO characteristics in my sample. Beginning with age, the mean for the bank CEOs in my sample is 57.5 years. The oldest CEO in my sample is 82 years old, while the youngest is 32 years old. Only 2% of the CEOs in my sample are women, underlining the underrepresentation of women in the top management teams of banks. Finally, the average total compensation of the CEOs in my sample is around $4 million.

Table 4-1 *Descriptive statistics*

This table reports the summary statistics of my sample. *Assets* is the book value of a bank's assets in $million. *CEO compensation* is the lagged total compensation in $000s. All other variable definitions are provided in Appendix A.

VARIABLES	Observations	Mean	Standard deviation	Minimum	Maximum
$\|DLLP\|_t$	7,005	0.0007	0.0016	0.0000	0.0572
Age diversity of NED $_t$	7,005	0.5	0.5	0	1
Age average of NED $_t$	7,005	62.67	4.12	46.71	80.57
Assets $_{t-1}$ *($million)*	7,005	82,068	290,609	907	2,615,183
Tier 1 capital % $_{t-1}$	7,005	11.08	2.89	1.32	31.58
Loan concentration $_t$	7,005	0.621	0.141	0.012	0.955
Assets growth $_t$	7,005	0.025	0.085	-0.392	1.406
EBDLLP $_t$	7,005	0.005	0.011	-0.126	0.261
Gender diversity $_t$ *(%)*	7,005	11.21	8.91	0	55.56
Nonexecutive directors $\%_t$	7,005	85.65	7.17	50	100
CEO/chairman duality$_t$	7,005	0.22	0.41	0	1
Audit committee size $_t$	7,005	4.14	.70	0	11
Board size $_t$	7,005	12.80	3.56	5	30
CEO age $_t$	6,050	57.52	6.65	32	82
CEO gender $_t$	6,900	0.020	0.140	0	1
CEO compensation ($000s) $_{t-1}$	6,003	4,091	5,348	252	84,826

4.1.4 Correlations and differences between means

Table 4-2 presents the correlation matrix. It shows that age-diversified boards are negatively correlated with *ln Assets*, *Gender diversity %*, *Nonexecutive directors %*, *Audit committee size*,

CEO age, *CEO gender*, and *ln CEO compensation*. On the other hand, such boards are positively correlated with |*DLLP*|, *Tier 1 capital %*, *EBDLLP*, and *Loan concentration*. The correlation matrix also shows that my dependent variable, |*DLLP*|, is positively correlated with *Tier 1 capital %*, *Assets growth*, and *CEO gender*. |*DLLP*| is negatively correlated with *EBDLLP*, *Loan concentration*, *Gender diversity %*, *CEO/chairman duality*, *Board size*, *CEO age*, and *ln CEO compensation*. Generally, the matrix does not show strong correlation among my independent variables, alleviating potential concern about multicollinearity.

Table 4-3 shows the difference between the means of two groups. I divide my sample based on the median age diversity level, with banks with higher (lower) than the median age diversity (not) considered age diversified. The table shows that age-diversified boards tend to feature in smaller, more profitable firms, tend to be less gender-diversified, less independent, and smaller boards, and are associated with smaller audit committees, and younger and less compensated CEOs. Although I control for these variables in my base model, I propose to use propensity-score-matching analysis to further control for potential self-selection bias.

Table 4-2 *Correlation matrix*

This table reports the correlation matrix between the variables included in my extended model. The total number of observations is 5,915. All variable definitions are available in Appendix A. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. |DLLP| $_t$	1.000														
2. Age diversity of NED $_t$	0.0525***	1.000													
3. ln Assets $_{t-1}$	-0.014	-0.233***	1.000												
4. Tier 1 capital % $_{t-1}$	0.062***	0.053***	-0.266***	1.000											
5. EBDLLP $_t$	-0.069***	0.028*	0.043**	0.160***	1.000										
6. Loan concentration $_t$	-0.089***	0.041**	-0.319***	-0.218***	-0.406***	1.000									
7. Assets growth $_t$	0.057***	0.023	-0.029*	-0.008	0.018	-0.018	1.000								
8. Gender diversity % $_t$	-0.037**	-0.135***	0.322***	0.121***	0.010	-0.053***	-0.032*	1.000							
9. Nonexecutive directors $\%_t$	-0.004	-0.235***	0.253***	0.011	-0.005	-0.045***	-0.045***	0.296***	1.000						
10. CEO/chairman duality $_t$	-0.059**	0.013	0.118***	-0.262***	0.139***	-0.022	0.007	-0.072***	0.097***	1.000					
11. Audit committee size $_t$	0.009	-0.140***	0.092***	0.024	-0.062***	0.025	-0.037**	0.173***	0.218***	-0.047***	1.000				
12. Board size $_t$	-0.067***	-0.139***	0.309***	-0.287***	-0.041**	-0.043**	0.022	-0.055***	0.184***	0.108***	0.129***	1.000			
13. CEO age $_t$	-0.055***	-0.065***	0.070***	-0.013	-0.043***	0.135***	-0.032*	0.011	-0.093***	0.031*	0.057***	-0.025	1.000		
14. CEO gender $_t$	0.036**	-0.030*	-0.057***	0.071***	-0.022	0.058***	-0.005	0.081***	0.023	-0.051***	-0.034**	-0.091*	-0.004	1.000	
15. ln CEO compensation $_{t-1}$	-0.049***	-0.143***	0.745***	-0.221***	0.111***	-0.288***	0.024	0.237***	0.121***	0.138***	0.087***	0.171***	0.130***	-0.097***	1.000

Table 4-3 *Differences in means*

This table reports the differences in means between boards with high and low age diversity. I use the sample median to differentiate between high and low age diversity boards. All variable definitions are provided in Appendix A. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Variables	Age diversity of NED=0	Age diversity of NED=1	Difference
1. |DLLP| $_{t}$	0.0007	0.0007	0.000
2. ln Assets $_{t-1}$	10.09	9.50	0.59***
3. Tier 1 capital % $_{t-1}$	11.03%	11.12%	0.09%
4. EBDLLP $_{t}$	0.0043	0.0054	-0.0011***
5. Loan concentration $_{t}$	0.616	0.626	-0.01***
6. Assets growth $_{t}$	0.024	0.027	-0.003*
7. Gender diversity % $_{t}$	12.18%	10.22%	1.96%***
8. Nonexecutive directors % $_{t}$	86.7%	84.6%	2.1%***
9. CEO/chairman duality $_{t}$	0.220	0.211	0.009
10. Audit committee size $_{t}$	4.31	3.96	0.35***
11. Board size $_{t}$	12.98	12.62	0.36***
12. CEO age $_{t}$	57.95	57.08	0.87***
13. CEO gender $_{t}$	0.021	0.19	0.02
14. ln CEO compensation $_{t-1}$	2.06	2.04	0.02***

4.2. Multivariate analysis

4.2.1 Base model

This section reports my main results on the relationship between age diversity and earnings management in banks. Table 4-4 reports the results of this analysis. I begin by regressing my earnings management measure against age diversity. The results show a negative association between *Age diversity of NED* and |*DLLP*|, significant at the 5% level. Then, I run the regression including bank-level controls. The results of this regression, which are reported in column 2, show that the coefficient of age diversity is still positive and significant. In untabulated analysis, I replace my *Loan concentration* and *Assets growth* variables with other proxies for bank diversification and firm growth, and my results still hold[23]. Column 3 reports

[23] Specifically, I use the ratio of non-interest income to net income as a proxy for bank diversification, and the percentage growth in net interest income as a proxy for bank growth.

the results after the inclusion of board-level controls. The results confirm my earlier findings. I use bank fixed effects and quarter-year fixed effects in all models' specifications.

Our base model shows that the coefficient on *Age diversity of NED* is negative and significant at the 1% level. The estimated magnitude of the coefficient is -0.000187, which translates to a decrease of 0.0187 per percentage point decrease in |*DLLP*|. For a median bank, this is equivalent to a reduction of $1.6 million in DLLP. I believe that this is a significant change in economic terms, given that the median LLP in my sample is $6.52 million and median earnings are $32 million. This finding is consistent with my hypothesis that age-diversified boards are more effective at monitoring managers and limiting earnings manipulation in banks.

Finally, I find a significant positive association between *Loan concentration* and earnings management, consistent with the notion that diversified banks tend to manage earnings (Tran et al., 2019a). In addition, and consistent with Park and Shin (2004), I find a positive association between bank growth and earnings management.

4.2.2 Extended model: CEO characteristics

In this section, I extend my base analysis by including CEO controls in the regression model. Due to data availability, my sample size drops to 5,915 observations and 188 banks. The advantage of this specification is that it accounts for CEO characteristics that may also affect DLLP reporting. Previous literature demonstrates that CEOs have a substantial effect on earnings management. My results might therefore be biased if banks with higher age diversity among their directors have CEOs that encourage the management of earnings. To alleviate this concern, I control for CEO characteristics that might affect earnings management practices.

The results of this extended model are reported in column 4, and show that my age diversity variable is still negative and significant at the 1% level, consistent with my previous findings. The coefficient of *Age diversity of NED* becomes -0.000174. This translates into a decrease of 0. 0174 per percentage point decrease in |*DLLP*| for banks with age-diversified boards.

Table 4-4 *Main results*

This table presents the main results of my model. Column 1 shows the results when I regress $|DLLP|_t$ on *Age diversity of NED*$_t$, column 2 shows the results when I add bank-level controls to the model, while column 3 reports the results when I add board-level controls. Finally, column 4 reports the results of the extended model. All variable definitions are provided in Appendix A. The main variable of interest is written in bold. Quarter-year fixed effects, and bank fixed effects are included in all the models. Robust standard errors in parentheses (clustered at the bank level). ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1) **Single regression**	(2) **Bank-level controls**	(3) **Board-level controls**	(4) **Extended model - CEO controls**
Age diversity of NED $_t$	**-0.000175*** **	**-0.000180*** **	**-0.000187*** **	**-0.000174*** **
	(6.23e-05)	**(6.42e-05)**	**(6.39e-05)**	**(6.56e-05)**
ln Assets $_{t-1}$		-0.000129	-0.000132	-1.51e-05
		(9.48e-05)	(9.77e-05)	(8.28e-05)
Tier 1 capital % $_{t-1}$		0.00134	0.00133	0.00184
		(0.00181)	(0.00178)	(0.00149)
EBDLLP $_t$		-0.0540	-0.0540	-0.0209
		(0.0329)	(0.0330)	(0.0133)
Loan concentration $_t$		-0.00151*	-0.00152*	-0.000950**
		(0.000848)	(0.000850)	(0.000411)
Assets growth $_t$		0.000985***	0.000988***	0.00113***
		(0.000261)	(0.000262)	(0.000239)
Gender diversity % $_t$			0.000477	3.67e-05
			(0.000496)	(0.000415)
Nonexecutive directors % $_t$			-1.35e-05	0.000322
			(0.000431)	(0.000403)
CEO/chairman duality $_t$			-3.91e-05	-5.91e-05
			(8.13e-05)	(9.39e-05)
Audit committee size $_t$			1.77e-05	2.45e-05
			(2.24e-05)	(2.55e-05)
Board size $_t$			-7.40e-07	-6.13e-07
			(1.27e-05)	(1.21e-05)
CEO age $_t$				-1.76e-06
				(5.79e-06)
CEO gender $_t$				-4.82e-05
				(0.000277)
ln CEO compensation $_{t-1}$				-0.000746
				(0.000546)
Constant	0.000432***	0.00271*	0.00271*	0.00230
	(9.90e-05)	(0.00157)	(0.00157)	(0.00150)
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	7,005	7,005	7,005	5,915
R-squared	0.170	0.220	0.221	0.218

5. Endogeneity and further robustness tests

5.1. Tenure diversity

It is plausible that tenure diversity may be highly correlated with age diversity since older directors are more likely to have longer tenures than younger directors. Such correlation could add significant noise to my reported findings. The absence of a tenure diversity variable in my models might lead the residual term to be correlated with age diversity, which would invalidate the model assumptions. Thus, I control for tenure diversity in my model to exclude this possibility.

We first collect information on director tenure from BoardEx. My data collection starts from 2003 because the availability of board data before this year is poor in BoardEx. I follow Hagendorff and Keasey (2012) and calculate tenure diversity as the standard deviation of directors' tenures on the board. Because BoardEx and ISS do not have a common firm identifier, I manually trace every bank in BoardEx to the same bank in ISS database using the bank name. Columns 1 and 2 of Table 4-5 report the results of this analysis. My observations drop to 3,745 (3,326) when I use the base model (extended model). However, my age diversity variable is still negative and significant, confirming the robustness of my findings.

5.2. Board education

Younger directors are arguably better educated than older directors (Hatfield, 2002), and this might add to their monitoring ability. Since age-diversified boards are more likely to have younger directors, board education may drive my results. If age-diversified boards are highly educated, then the argument that age diversity leads to less earnings management can be disputed. Thus, I extend my model and control for board education.

Following Fan et al. (2019), I assign a value of one to directors with bachelor degrees, two to directors with master's degrees, three for directors with doctoral degrees, and zero otherwise. Then, I calculate the average of the directors' education level for a given board. I collect data on directors' education using BoardEx. I follow the same procedure as was used in the previous section to match the BoardEx data to my dataset. Columns 3 and 4 of Table 4-5 report the results of this analysis. Because my data start from 2003, my observations drop to 4,263 (4,070) in the base (extended) model analysis. My results corroborate the results of the main analysis. The coefficient of $Age\ diversity_t$ is still negative and significant at the 5% level in both columns. The coefficients are also similar in magnitude to those reported in the main analysis.

Table 4-5 *Board tenure and board education analysis*

This table reports the results when I control for tenure diversity and board education. Columns 1 and 2 report the results when I control for tenure diversity, and columns 3 and 4 those when I control for board education. The base model is used in columns 1 and 3, while the extended model is used in columns 2 and 4. All variable definitions are provided in Appendix A. The main variable of interest is written in bold. Quarter-year fixed effects, and bank fixed effects are included in all the models. Robust standard errors in parentheses (clustered at the bank level). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1) Base model - tenure	(2) Extended model - tenure	(3) Base model – education	(4) Extended model - education
Age diversity of NED $_t$	**-0.000180***	**-0.000158***	**-0.000175****	**-0.000184****
	(0.000264)	**(8.34e-05)**	**(6.94e-05)**	**(7.15e-05)**
Constant	0.00128	0.00369	0.000709	0.00233
	(0.00171)	(0.00233)	(0.00136)	(0.00184)
Bank and board controls	Yes	Yes	Yes	Yes
CEO controls	No	Yes	No	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	3,745	3,326	4,263	4,070
R-squared	0.243	0.253	0.239	0.254

5.3. Other sensitivity checks

We perform a battery of sensitivity checks to confirm the robustness of my findings. This section reports on these tests but for brevity reasons does not tabulate them. First, the risk committee plays an active role in LLP reporting (Aebi et al., 2012). Hence, I control for the presence of a separate risk committee (or other committees related to loan management) in the board under the assumption that the presence of such committees will improve LLP reporting. Second, earnings management prevails in banks with high information asymmetry (Bushman and Williams, 2012, Tran et al., 2019a). I use analysts' forecast error and the dispersion of analysts' forecasts as proxies for the quality of the information environment of banks (Armstrong et al., 2010). Banks with more forecast error and a higher dispersion among analysts have a poorer information environment. This, while the upper echelon theory suggests that top executive directors have a substantial effect on firms' decisions (Hambrick and Mason, 1984), I focus on the age diversity of nonexecutive directors. My justification for this selection is that nonexecutive directors are responsible for monitoring executives' actions. Thus, I control for executive directors' average age and age diversity to preclude the

possibility that their age diversity drives my results. My results remain robust under all these specifications.

5.4. Propensity score matching

Directors are possibly not randomly selected into banks. If banks that aim to improve their financial reporting quality simultaneously increase the diversity in their boards, it will be difficult to conclude that age diversity affects earnings quality. I thus utilise propensity score matching to attenuate this effect. Propensity score matching consists of two stages of analysis. The first stage uses observable bank characteristics to predict the likelihood that a bank will choose to have an age-diversified board (i.e. treated). The second stage matches each treated bank with another bank that has a very similar likelihood of being treated but is not treated (i.e. control).

In my context, I split my sample into banks with high-age-diversity boards (treated) and banks with low-age-diversity boards (control). Next, I calculate the probability of a bank being in the treated group (i.e. banks with high age diversity) using the control variables from model 2 as the determinants. Then, I match each treated observation with a control observation which has the closest propensity score. To improve the matching quality, I allow each observation to appear more than once (i.e. matching with replacement) and impose a calliper of 0.005%. My final dataset comprises 1,328 observations. Panel A of Table 4-6 reports the difference between the means of my control variables after matching. The results show that propensity score matching succeeds in eliminating the differences between the treated and control groups. After matching, age diversity is the only characteristic by which the two groups can be distinguished.

Finally, I run my extended regression to find the association between age diversity and earnings management. The results are reported in Panel B of Table 4-6, confirming my previous findings and showing that the age diversity of NED is associated with a reduction in earnings management, as measured by DLLP. The coefficient of *Age diversity of NED* is negative and significant at the 5% level. I perform my matching again but without replacement and obtain similar results. The coefficient of my main explanatory variable is still negative and significant at the 5% level. I also perform the propensity score matching again on my base model but leave those results (which remain the same) untabulated for brevity reasons.

Table 4-6 *Propensity score matching*

This table presents the results of the propensity-score-matching analysis. Panel A shows the differences in means between the highly age-diversified boards and the less age-diversified boards, after matching with replacement. Panel B shows the regression analysis using the matched sample. Column 1 reports the results of using matching with replacement, while column 2 reports the results of using matching without replacement. All variable definitions are provided in Appendix A. The main variable of interest is written in bold. Quarter-year fixed effects, and bank fixed effects are included in all the models. Robust standard errors in parentheses (clustered at the bank level). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Differences in means

VARIABLES	Age diversity =1	Age diversity =0	Difference	P-value
ln Assets $_{t-1}$	9.57	9.52	0.050	0.198
Tier 1 capital % $_{t-1}$	11.25%	11.16%	0.001	0.428
EBDLLP $_{t}$	0.0045	0.0043	0.000	0.258
Loan concentration $_{t}$	.629	0.628	0.001	0.926
Assets growth $_{t}$	0.023	0.029	-0.006	0.108
Gender diversity %$_{t}$	0.111	0.110	0.001	0.963
Nonexecutive directors $_{t}$	0.86	0.86	0.000	0.855
CEO/chairman duality $_{t}$	0.203	0.186	0.017	0.269
Audit committee size $_{t}$	4.22	4.23	-0.010	0.817
Board size $_{t}$	12.65	12.6	0.050	0.701
CEO age $_{t}$	57.66	57.98	-0.320	0.215
CEO gender $_{t}$	0.026	0.017	0.009	0.134
ln CEO compensation $_{t-1}$	2.04	2.03	0.010	0.139

Panel B: Regression analysis

VARIABLES	(1) With replacement	(2) Without replacement
Age diversity of NED $_{t}$	**-0.000154****	**-0.000209****
	(7.73e-05)	**(8.74e-05)**
ln Assets $_{t-1}$	1.51e-05	5.79e-05
	(0.000110)	(0.000108)
Tier 1 capital % $_{t-1}$	-0.000319	0.00176
	(0.00206)	(0.00196)
EBDLLP $_{t}$	-0.0396*	-0.0576***
	(0.0228)	(0.0216)
Loan concentration $_{t}$	-5.55e-05	-0.000655

	(0.000540)	(0.000580)
Assets growth $_t$	-3.68e-05	0.000400
	(0.000662)	(0.000321)
Gender diversity % $_t$	0.000414	0.000674
	(0.000544)	(0.000511)
Nonexecutive directors % $_t$	0.00101	0.000915
	(0.000817)	(0.000629)
CEO/chairman duality $_t$	-0.000220*	-6.39e-05
	(0.000117)	(0.000104)
Audit committee size $_t$	5.29e-06	1.74e-05
	(3.75e-05)	(3.59e-05)
Board size $_t$	-1.07e-05	-1.62e-05
	(1.98e-05)	(1.88e-05)
CEO age $_t$	-3.35e-06	-7.34e-06
	(1.02e-05)	(8.96e-06)
CEO gender $_t$	0.000586	0.000616
	(0.000425)	(0.000399)
ln CEO compensation $_{t-1}$	-0.00122	-0.00164*
	(0.00108)	(0.000968)
Constant	0.00237	0.00341*
	(0.00216)	(0.00198)
Quarter-year fixed effects	Yes	Yes
Bank fixed effects	Yes	Yes
Observations	1,328	1,922
R-squared	0.258	0.268

6. Additional analysis

6.1. Continuous-variable and quantile regression analysis

The main analysis uses a dummy variable instead of a continuous variable to measure the effect of age diversity on earnings management in banks. A continuous variable allows me to measure the effect of an incremental increase in age diversity on earnings management. Thus, I run my analysis again using a continuous variable to measure the age diversity of the nonexecutive directors. This variable is simply the standard deviation of their ages divided by their mean age. Table 4-7 reports the findings of this analysis. Column 1 of Panel A reports the results of the base model, column 1 of Panel B those of the extended model. The base model results show that the coefficient of age diversity (continuous) is -0.002 and significant at the 5% level. In economic terms, a one-standard-deviation increase in age diversity leads to a decrease of $0.72 million in DLLP in real terms[24]. This is a high decrease in earnings

[24] 0.0408*(-0.00205)= -0.00008364 in DLLP, which I multiply by the median loan (8594) to get a value of -0.72 million in DLLP.

management given that the median DLLP in my sample is $3.2 million and the median earnings are $32 million. Column 1 of Panel B reports the results of the extended model. The results are similar to those reported in Panel A in magnitude and significance.

Next, I use quantile regression analysis, employing Parente and Silva (2016)'s method in calculating clustered standard errors. This analysis has two advantages over fixed effects analysis. The fixed effects estimator assumes that the magnitude of the relationship between age diversity and earnings management is consistent across different quantiles of the data. On the other hand, the quantile regression allows me to investigate whether, at lower versus higher levels of age diversity, a slight increase in age diversity affects earnings management or not. Another advantage of the quantile regression over the fixed effects estimator is that it does not make any assumption about the distribution of the residuals, thus ensuring the validity of my results.

Table 4-7 reports the results of the quantile regression analysis. Panel A reports the results of my basic model, Panel B (columns 2-4) those of my extended model. I report the results of the 25^{th} percentile (column 2), 50^{th} percentile (column 3), and 75^{th} percentile (column 4). The reported results suggest that the relationship between *Age diversity of NED* and |*DLLP*| is not homogeneous across the sample. The effect of age diversity on earnings management becomes stronger with an increase in age diversity. The results of the quantile model suggest that the coefficient of age diversity, conditional on the 25^{th} percentile, is insignificantly different from zero. However, the coefficient increases in both magnitude and significance as the level of age diversity increases. In the 50^{th} percentile regression, the coefficient of *Age diversity of NED* is -0.0005 (p-value<0.05), whereas it increases to -0.0013 (p-value<0.01) in the 75^{th} percentile regression. Panel B shows that my results do not change much when I control for CEO characteristics. Overall, the results of the quantile regression confirm my earlier finding but show that the effect of age diversity on |*DLLP*| is not consistent across my sample. They reveal that the strength of the relationship is increasing with the increase in age diversity.

Table 4-7 *Continuous-variable and quantile regression*

This table reports the results of the continuous-variable and quantile regressions. Panel A reports the results of the basic model, Panel B those of the extended model. In both panels, column 1 reports the results of the fixed effects specification, column 2 the results of the 25th percentile model specification, column 3 the results of the 50th percentile model specification, and column 4 the results of the 75th percentile model specification. Age diversity of NED $_t$ in this table is a continuous variable that is calculated as the standard deviation of nonexecutive directors' age over their mean age. All other variables definitions are provided in Appendix A. The main variable of interest is written in bold. Quarter-year fixed effects, and bank fixed effects are included in all the models. Robust standard errors in parentheses (clustered at the bank level). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Base model analysis

	(1)	(2)	(3)	(4)
VARIABLES	**Fixed effects**	**Q25**	**Q50**	**Q75**
Age diversity of NED $_t$	**-0.00205****	**-0.000136**	**-0.000539*****	**-0.00105*****
	(0.000988)	**(0.000160)**	**(0.000204)**	**(0.000368)**
ln Assets $_{t-1}$	-0.000124	-1.98e-05	-4.76e-05*	-7.63e-05**
	(9.71e-05)	(2.81e-05)	(2.66e-05)	(2.98e-05)
Tier 1 capital % $_{t-1}$	0.00133	0.000433	0.00102	0.00187**
	(0.00177)	(0.000378)	(0.000682)	(0.000848)
EBDLLP $_t$	-0.0541	-0.00577	-0.00878***	-0.0144***
	(0.0330)	(0.0118)	(0.00323)	(0.00174)
Loan concentration $_t$	-0.00156*	-0.000258	-0.000394**	-0.000560***
	(0.000857)	(0.000223)	(0.000158)	(0.000180)
Assets growth $_t$	0.000989***	0.000777***	0.00116***	0.00143***
	(0.000263)	(0.000119)	(9.31e-05)	(0.000115)
Gender diversity % $_t$	0.000446	0.000104	5.10e-05	-2.59e-05
	(0.000498)	(0.000121)	(0.000150)	(0.000187)
Nonexecutive directors % $_t$	-8.71e-05	8.52e-05	6.81e-05	0.000365**
	(0.000450)	(0.000107)	(0.000103)	(0.000160)
CEO/chairman duality $_t$	-3.39e-05	9.84e-06	5.36e-06	1.59e-05
	(8.03e-05)	(1.40e-05)	(1.60e-05)	(2.06e-05)
Audit committee size $_t$	2.38e-05	3.71e-06	-1.25e-07	4.04e-06
	(2.33e-05)	(6.05e-06)	(6.91e-06)	(1.03e-05)
Board size $_t$	-3.02e-06	-5.91e-07	3.06e-06	4.26e-06
	(1.31e-05)	(2.84e-06)	(3.59e-06)	(5.02e-06)
Constant	0.00290*	0.000484	0.00121***	0.00138***
	(0.00161)	(0.000398)	(0.000333)	(0.000431)
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	7,005	7,005	7,005	7,005
R-squared	0.220	0.286	0.296	0.316

Panel B: Extended model analysis

VARIABLES	(1) Fixed effects	(2) Q25	(3) Q50	(4) Q75
Age diversity of NED $_{t}$	**-0.00182****	**-0.000153**	**-0.000674****	**-0.00117****
	(0.000777)	**(0.000229)**	**(0.000293)**	**(0.000477)**
ln Assets $_{t-1}$	-1.57e-05	-3.29e-06	-1.39e-05	-4.17e-06
	(8.46e-05)	(2.61e-05)	(2.50e-05)	(4.60e-05)
Tier 1 capital % $_{t-1}$	0.00181	0.000877**	0.00120**	0.00299***
	(0.00148)	(0.000381)	(0.000565)	(0.000860)
EBDLLP $_{t}$	-0.0210	-0.00231	-0.00446**	-0.0138***
	(0.0134)	(0.00235)	(0.00208)	(0.00282)
Loan concentration $_{t}$	-0.000989**	-0.000269**	-0.000313**	-0.000402*
	(0.000424)	(0.000132)	(0.000154)	(0.000231)
Assets growth $_{t}$	0.00113***	0.000742***	0.00116***	0.00136***
	(0.000240)	(0.000195)	(0.000107)	(0.000124)
Gender diversity % $_{t}$	-1.36e-05	0.000117	2.48e-05	9.07e-05
	(0.000423)	(0.000166)	(0.000185)	(0.000241)
Nonexecutive directors % $_{t}$	0.000250	2.52e-05	8.15e-05	0.000203
	(0.000412)	(0.000118)	(0.000165)	(0.000215)
CEO/chairman duality $_{t}$	-5.63e-05	1.09e-05	-5.14e-06	7.14e-06
	(9.33e-05)	(1.34e-05)	(1.67e-05)	(2.28e-05)
Audit committee size $_{t}$	3.13e-05	3.91e-06	-1.35e-06	9.23e-06
	(2.64e-05)	(6.87e-06)	(8.68e-06)	(1.25e-05)
Board size $_{t}$	-3.49e-06	-1.74e-06	1.63e-06	7.40e-06
	(1.25e-05)	(2.81e-06)	(4.08e-06)	(6.85e-06)
CEO age $_{t}$	-8.51e-07	-5.78e-06***	-4.63e-06	-3.64e-06
	(6.05e-06)	(1.59e-06)	(2.88e-06)	(3.84e-06)
CEO gender $_{t}$	-1.99e-05	-5.79e-06	1.79e-05	0.000196
	(0.000291)	(5.73e-05)	(9.80e-05)	(0.000161)
ln CEO compensation $_{t-1}$	-0.000733	-5.61e-05	-0.000181	-0.000423*
	(0.000549)	(0.000134)	(0.000138)	(0.000238)
Constant	0.00247	0.00109***	0.00229***	0.00272***
	(0.00154)	(0.000371)	(0.000405)	(0.000708)
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	5,915	5,915	5,915	5,915
R-squared	0.217	0.259	0.293	0.330

6.2. The relationship between age diversity and loan risk

This section investigates how age diversity is related to loan quality. Previous studies suggest that banks that do not manage earnings and report timelier LLP are associated with decreased loan risk (Beatty and Liao, 2011, Bushman and Williams, 2012, Cohen et al., 2014). For instance, Beatty and Liao (2011) show that banks that report timelier LLP are associated with lower corruption in loans because their timelier reporting leads to timelier correction. In addition, Bushman and Williams (2012) find that banks that do not manage earnings are less risky. They argue that this is because earnings management dampens earnings quality and thus inhibits external stakeholders from disciplining banks over risk taking. Cohen et al. (2014) document that banks that managed earnings before the financial crisis had higher tail risks, as measured by stock price crashes.

Therefore, given that my main analysis shows that banks with age-diversified boards are less likely to engage in earnings management, I postulate that these banks will also be associated with decreased loan risk. Banks have lower loan risk when they lend exclusively to borrowers who can repay. I use forward *NPL* and *Charge-off* to measure loan risk. Thus, I expect banks with age-diversified boards to be associated with lower forward *NPL* and *Charge-off*.

We report the results in Table 4-8. The results show that age diversity is negatively associated with loan risk. The association between *Age diversity of NED* and both *Charge-off* and *NPL* is negative and significant, at the 5% level, at least. In untabulated analysis, I use lead *NPL* and *Charge-off* to reflect the fact that it takes time for the board to affect loan quality. I use one, two, three, and four years lead periods[25]. My results hold under all these specifications.

[25] I.e., I use NPL_{t+1}, NPL_{t+2}, NPL_{t+3}, NPL_{t+4}, $Charge\text{-}Off_{t+1}$, $Charge\text{-}Off_{t+2}$, $Charge\text{-}Off_{t+3}$, and $Charge\text{-}Off_{t+4}$.

Table 4-8 *The association between age diversity and loan quality*

This table shows the results for the association between age diversity and loan quality in banks. The dependent variable is *Charge-off* in columns 1 and 3, while *NPL* is the dependent variable in columns 2 and 4. Columns 1 and 2 shows the results using the base model, and columns 3 and 4 those of the extended model. All variable definitions are provided in Appendix A. The main variable of interest is written in bold. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1) Charge-off– base model	(2) NPL – base model	(3) Charge-off – extended model	(4) NPL – extended model
Age diversity of NED $_t$	**-0.000289****	**-0.00232****	**-0.000312****	**-0.00199****
	(0.000130)	**(0.000919)**	**(0.000141)**	**(0.000939)**
ln Assets $_{t-1}$	7.39e-06	-0.000263	0.000189	0.000254
	(0.000190)	(0.00128)	(0.000197)	(0.00143)
Tier 1 capital % $_{t-1}$	0.00405	0.0342	0.00551*	0.0540**
	(0.00306)	(0.0227)	(0.00318)	(0.0228)
EBDLLP $_t$	-0.291***	-1.107***	-0.267**	-0.929*
	(0.0801)	(0.419)	(0.105)	(0.556)
Loan concentration $_t$	-0.000819	0.0108	-0.000103	0.0162*
	(0.000964)	(0.00987)	(0.000789)	(0.00948)
Assets growth $_t$	0.000781	-0.000479	0.00104*	0.00208
	(0.000518)	(0.00232)	(0.000581)	(0.00183)
Gender diversity % $_t$	-0.00120	-0.0107	-0.00182*	-0.0156**
	(0.000899)	(0.00716)	(0.00100)	(0.00786)
Nonexecutive directors % $_t$	0.000662	0.00790	0.000347	0.000962
	(0.00108)	(0.00556)	(0.00113)	(0.00665)
CEO/chairman duality $_t$	-7.15e-05	-0.000722	-8.67e-05	-0.000574
	(0.000104)	(0.000840)	(0.000121)	(0.000987)
Audit committee size $_t$	7.10e-05*	0.000266	5.25e-05	0.000547*
	(4.26e-05)	(0.000253)	(4.90e-05)	(0.000300)
Board size $_t$	-8.87e-06	-4.42e-05	-3.34e-06	4.03e-05
	(2.08e-05)	(0.000165)	(2.13e-05)	(0.000169)
CEO age $_t$			1.64e-06	6.61e-05
			(1.27e-05)	(9.80e-05)
CEO gender $_t$			-0.000452	-0.00414
			(0.000663)	(0.00254)
ln CEO compensation $_{t-1}$			-0.00199*	-0.0219***
			(0.00111)	(0.00794)
Constant	0.00140	0.00218	0.00292	0.0334
	(0.00243)	(0.0145)	(0.00284)	(0.0234)
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Observations	7,005	7,005	5,915	5,915
R-squared	0.357	0.444	0.349	0.464

7. Conclusion

This paper examines the association between age diversity and earnings management in banks. I use LLP as my accrual-based earnings management proxy, the most significant single accrual for commercial banks. My sample covers US banks for the period between 1996 and 2018. Controlling for various firm and board characteristics, and bank fixed effects, I find that age diversity is negatively related to the absolute value of DLLP. I also address heterogeneity in the association between age diversity and earnings management using a quantile regression estimator. The results suggest the relationship increases with the increase in age diversity. I also control for board tenure diversity and board education to rule out the possibility of omitted variable bias affecting my results. Finally, I use propensity score matching to attenuate the effect of self-selection bias. My results remain robust under all these tests.

To the best of my knowledge, my study is the first to show that the age diversity of the board improves its effectiveness in monitoring the quality of financial reports. Specifically, I show that the age diversity of the board improves the transparency of financial reports in banks. In addition, amidst increasing calls to make corporate boards diverse, policymakers might find my results useful. My evidence supports regulatory bodies' inducement of companies to increase diversity in their boards.

Chapter 5:Summary and conclusion

This thesis aims to explore to what degree different corporate governance characteristics affect the financial reporting quality of banks. It is comprised of three related empirical studies: (1) CFO gender and financial reporting transparency in banks; (2) Does ethnic diversity on the board affect the timeliness of loan loss provision reporting in banks; and (3) Age diversity and earnings management in the banking sector. This section is organised as follows. First, I provide a summary of each study, its specific contribution to the literature, and its limitations. Second, I describe the contribution of the thesis as a whole. Next, I discuss limitations of this thesis. Finally, direction for future studies is provided.

1. Summary of empirical studies

2.1. CFO gender and financial reporting transparency in banks

The first study (Chapter 2) investigates the effect of women CFOs on the timeliness of loan loss provisions (LLP) reporting. Both regulators and academics believe that aggressive reporting of LLP aggravated the effects of the financial crisis. For instance, Jin et al. (2018) find that banks that delayed LLP recognition were more likely to collapse during the 2007-09 financial crisis. Additionally, psychology literature suggests that women are more conservative and tend to make more ethically relevant decisions than men. Combining the general notion about decision making by women with the research on LLPs, this study examines whether banks with women as CFOs report timelier LLP than those whose CFOs are men.

Using a sample of 2,760 bank-quarters, I observe that banks with women as CFOs exhibit timelier LLP recognition than banks with men as CFOs. I use bank fixed effects to control for endogeneity concerns driven by omitted variable bias. The results are similar when I use difference-in-differences analysis. Crucially, I find that banks that switch from a man to a woman as CFO show an improvement in the timeliness of their LLP reporting. I also find that capital restriction moderates the relationship between women as CFOs and the timeliness of LLP. More specifically, the findings show that women who are CFOs in banks with lower capital constraints report timelier LLP than women who are CFOs in banks with higher capital constraints. However, I still find that women CFOs report timelier LLP than men CFOs in both settings.

The results of Chapter 2 support the notion that women CFOs are more risk averse and make more ethically aware decisions than their male counterparts (Huang and Kisgen, 2013, Ho et al., 2015). Although Adams and Ragunathan (2017) show that women tend to follow riskier strategies in financial firms than in non-financial firms, my findings confirm that they are still more risk averse than men. As my results indicate that female executives are associated with lower agency costs, my study encourages bank boards, regulators, shareholders, and debtholders to increase the appointment of women to the top managerial positions in banks.

This study is not without limitations. I believe that the small number of women CFOs reduces the statistical power of the tests, an inherent problem in most gender studies in corporate settings. Besides, gender studies state that two channels guide women to be associated with higher financial reporting quality: (1) they are more risk averse and (2) they hold higher ethical standards. However, it is unclear whether the results I observe are caused by both channels or one of them. Thus, I urge future studies to give more attention to what truly drives women to be associated with earnings of higher quality.

2.2. Does ethnic diversity of the board affect the timeliness of loan loss provision reporting in banks?

In the second study (Chapter 3), I explore how directors from ethnic minorities affect financial reporting in banks. Using data from nearly 200 unique banks for the period between 1996 and 2017, I find that boards with non-Caucasian independent directors are associated with better monitoring as observed by timelier LLP reporting. Further investigation shows that this improvement in monitoring is only observed in banks with increased risk of default. In other words, directors from non-Caucasian ethnic backgrounds push banks to be more risk averse during risky periods for those banks. This finding might suggest that ethnically diverse boards believe that accounting conservatism allows firms to capture loss-making investments earlier and hence improves firm performance, consistent with other findings in the literature (Ahmed and Duellman, 2011, Akins et al., 2017, Hsu et al., 2017).

My findings are particularly relevant to corporate governance practices, especially amid the current calls for an increase in ethnic diversity on boards. For example, firms in the FTSE100 (FTSE350) in the United Kingdom have been given until 2021 (2024) to appoint at least one board member of a non-Caucasian ethnic background (Guardian, 2017). Moreover, recent statistics show that directors from ethnic minorities account for more than 20% of new board appointments in the S&P500 (Mishra, 2019).

Even though non-Caucasians comprise a wide range of heterogeneous ethnicities, this study assumes homogeneity in all non-Caucasian ethnicities. However, breaking down the group of

non-Caucasian ethnicities into African, Asian, and Hispanic is not without challenges. The limited number of observations for each non-Caucasian ethnicity reduces the power of the tests significantly. In addition, due to some missing data on the ethnicity of some directors, I use name ethnic classifier software to predict missing ethnicities (Ye et al., 2017, Ye and Skiena, 2019). Thus, my findings depend extensively on the accuracy of the software prediction. Although Ye et al. (2017) and Ye and Skiena (2019) demonstrate the reliability of the software prediction, I draw the readers' attention to the need to interpret the results cautiously.

In sum, the findings of this study support the calls for increasing the presence of directors from ethnic minorities. In addition, this study shows ethnic diversity on the board enhances board monitoring and reduces bank risks.

2.3. Age diversity and earnings management in the banking sector

In Chapter 4, I examine the effect of age diversity on earnings management in banks. Age is one of the most important demographic characteristics that affect individuals' decision making (Hagendorff and Keasey, 2012, Zhou et al., 2019). For example, old directors are more conservative and highly experienced (Gorton and Huang, 2006, Aggarwal et al., 2008). On the other hand, young directors are overconfident and highly educated (Hatfield, 2002, Forbes, 2005). This variation in cognitive thinking brings cognitive conflict to the board, which has at least two advantages. First, it provokes 'thinking outside the box' as directors from different age groups view business problems differently (Zhou et al., 2019). Second, cognitive conflict increases board independence due to directors from different age groups being less likely to form strong social ties (Bernile et al., 2018). Thus, I postulate that directors from different age groups will improve boards' monitoring performance and reduce earnings management.

A panel dataset of US banks for the period between 1996 and 2018 is used. I find that age diversity reduces earnings management and loan quality, as measured by non-performing loans and loan charge-offs, in banks. The results are robust to controlling for bank characteristics, board-level characteristics, CEO characteristics, and bank fixed effects. Aiming to control for self-selection bias, propensity score matching is implemented. The results persist after I compare a group of age-diversified banks with a matched sample of non-age-diversified banks.

Chapter 4 contributes to the scarce literature on the effect of age diversity on firms. The literature shows that the age diversity of the board is associated with poor acquisitions (Hagendorff and Keasey, 2012), less risk taking (Zhou et al., 2019), and lower profitability

(Talavera et al., 2018). My study extends the findings of this literature and shows that age diversity has a positive effect on the financial reporting quality of banks. To the best of my knowledge, it is the first to establish a link between the age diversity of the board and financial reporting quality.

3. Implications for policy and corporate governance

Besides contributing to the bank accounting, governance, and diversity literature, this thesis has at least two practical implications. First, the results of this thesis are particularly relevant amid current calls to impose gender and ethnic quotas on boards. My findings suggest that gender, ethnic, and age diversity improve financial reporting quality in banks, offering support to such calls. However, I urge readers to interpret my results with caution in this regard. The studies of this thesis use data from the US, a country where there is no prior requirement for quotas[26]. In other words, my findings suggest that financial reporting quality improves in banks that *voluntarily* diversify their boards (senior management team). However, my findings do not guarantee an improvement in financial reporting quality in banks that *compulsorily* diversify their boards (senior management team). Mandatory quotas might motivate banks to appoint underqualified or ineffective directors, who may be selected merely to comply with the requirements. Thus, such regulation may have no, or even adverse, consequences on boards' performance. Previous studies provide some evidence that regulations might not always produce the intended benefits. For instance, Kim and Klein (2017) find that changes to NYSE and NASDAQ listing standards in 1999 – which required firms to have fully independent audit committees – did not improve firm performance or financial reporting quality. Similarly, Lennox (2016) does not find any effects of restrictions on auditor tax services on audit quality.

Second, the expected-loss model of LLP reporting has replaced the old incurred-loss model in most of the accounting regimes around the world[27]. For a long time, accounting bodies rejected calls for this change because the expected-loss model, although timelier, is more discretionary and, hence, facilitates managerial ability to manage earnings. Because my thesis focuses on LLP reporting, I show that efficient corporate governance improves the timeliness of LLP

[26] For example, Norway, Italy, and Germany have started imposing gender quotas on corporate boards. In addition, according to the Parker review of corporate governance in the United Kingdom, firms in FTSE100 firms will need to have at least one director from an ethnic minority by 2021, while firms in the FTSE500 must fulfil the same goal by 2024.

[27] The incurred-loss model requires banks to report LLP only when there is objective evidence of credit loss. In contrast, the expected-loss model requires banks to report LLP at the time of loan issuance. The new changes became effective under IFRS for firms with a fiscal year starting on or after 1st January 2018. In the US, a similar standard has been applied for firms with a fiscal year starting on or after 15th December 2019.

recognition and reduces earnings management. In particular, my results imply that diversity in CFO characteristics and boards significantly affects LLP reporting. Under the new regime, bank regulators should put more emphasis on bank governance to ensure that bank managers do not abuse the new standard.

4. Limitations

This thesis has at least two limitations. First, although the findings of this thesis are robust to the use of various control variables, fixed effects, extensive robustness checks, and alternative explanations, I cannot rule out the issue of omitted variable bias. There is always the potential that another variable is simultaneously correlated with my governance characteristic and the financial reporting quality measure. In that sense, the results reported in this thesis might not be valid.

Second, due to data availability issues, my sample includes only large banks in the S&P1500. This will potentially limit the generalisability of my findings to large listed banks only. As banks' size and ownership structure have significant effects on their governance mechanisms, I cannot confirm that the recommendations of this thesis will be useful for small or private banks.

5. Directions for future studies

As discussed throughout the thesis, LLP reporting has a significant effect on bank risk. With the new shift of the LLP standard from the objective-loss to the expected-loss model, the role of corporate governance in LLP reporting has become even more critical. The new expected-loss model provides greater power to managers in LLP estimation, allowing them to smooth income, and thus increase information asymmetry. Therefore, I suggest that future research sheds more light on the interaction between corporate governance characteristics and LLP reporting under the new regime.

In addition, the vast majority of previous research on diversity has been conducted in the US, while very few studies have looked at firms outside the US. This limits their generalisability to settings outside the US. Corporate governance characteristics in the US differ from those in the rest of the world. For example, board composition and ownership structure are significantly different (Becht et al., 2011). Boards of US banks tend to have a majority of outside directors, while less than 50% of the board members of banks outside the US tend to be outside directors (Ferreira et al., 2010). In addition, the ownership structure of banks in the US is dispersed. In contrast, the ownership structure in China, for example, is concentrated (Lin and Zhang, 2009). Thus, exploring how board diversity affects banks in different

governance regimes could help improve the understanding of the effect of diversity on firm performance.

Abbreviation table

Abbreviation	Explanation
LLP	Loan Loss Provision
DLLP	Discretionary Loan Loss Provision
CFO	Chief Financial Officer
CEO	Chief Executive Officer
ECB	European Central Bank
R&D	Research & Development
FTSE	Financial Times Stock Exchange Group
S&P	Standard & Poor's
IMF	International Monetary Funds
NPL	Non-Performing Loans
MFW	Man Followed by Woman
MFM	Man Followed by Man
ISS	Institutional Shareholder Services
GDP	Gross Domestic Product
OLS	Ordinary Least Squares
SEC	Securities and Exchange Commission
CRSP	The Centre for Research in Security Prices
NED	Non-Executive Director
EBDLLP	Earnings before Discretionary Loan Loss Provision
BOD	Board of Directors

Appendix A: Variable definitions

Variable	Definition
%Δ GDP	Percentage change in the gross domestic product (GDP).
%ΔCase_Shiller house index	The percentage change in the Case-Shiller return.
%Δunemployment	The percentage change in the unemployment rate.
|DLLP|	The absolute value of discretionary loan loss provision scaled by lagged total loans. I calculate DLLP as the estimated residuals from Model 1 (chapter 4).
2 Ethnic groups	A dummy variable which takes the value one if the total number of ethnic groups (i.e. Caucasian, African, Hispanic, or Asian) among the independent board members (or in the audit committee) is *two*, and zero otherwise.
3 Ethnic groups	A dummy variable which takes the value one if the total number of ethnic groups (i.e. Caucasian, African, Hispanic, or Asian) among the independent board members (or in the audit committee) is *three*, and zero otherwise.
4 Ethnic groups	A dummy variable which takes the value one if the total number of ethnic groups (i.e. Caucasian, African, Hispanic, or Asian) among the independent board members (or in the audit committee) is *four*, and zero otherwise.
Age average of NED	The arithmetic mean of independent directors on the board of directors.
Age diversity of NED	A dummy variable that takes the value one if the level of age diversity among the nonexecutive directors is above the sample median and zero otherwise. The level of diversity of the board is calculated as the standard deviation of the ages of the nonexecutive directors over their average age.
Assets growth	The percentage increase in assets over the quarter.

Audit committee size	Total number of directors in the audit committee.
Board size	Total number of directors on the board of directors.
CEO age	The age of the CEO as provided by ExecuComp.
CEO gender	A dummy variable that takes the value one if the CEO is a woman and zero otherwise.
CEO ownership	Total number of shares owned by the CEO (excluding options) over total number of common shares outstanding.
CEO/chairman duality	A dummy variable which takes the value one if the same person holds the CEO and chairman roles, and zero otherwise.
CFO gender	A dummy variable that takes the value one if the CFO is a woman and zero otherwise.
CFO ownership	Total number of shares owned by the CFO (excluding options) over total number of common shares outstanding.
Change in loan	The change in loans over the quarter scaled by lagged total loans.
Change in NPL	Change in non-performing loans (NPL) over the quarter scaled by total loans.
Charge-off	Net charge-off as a percentage of total loans.
Earnings before LLP	Earnings before extraordinary items minus loan loss provision scaled by total assets.
EBDLLP	Earnings before extraordinary items plus DLLP scaled by lagged total loans.
Education	For all nonexecutive director, we assign a value of one to directors with bachelor's degrees, two to directors with master's degrees, three for directors with doctoral degrees, and zero otherwise. Then, we calculate the average of the directors' education level for a given board.

Financial experts on audit committee %	The number of financial experts on the audit committee divided by the total number of directors on the audit committee. A financial expert is a member with experience of preparing or auditing financial statements.
Financial experts on BOD %	The total number of financial experts on the board divided by board size.
Gender diversity %	Equals the total number of independent women directors on the board of directors divided by the total number of directors on the board.
Independent directors on BOD %	The number of independent directors divided by the total number of directors on the board. I define an independent board member as an outsider with no relationship to the firm other than being a member of the board of directors.
LLP	Loan loss provision as a percentage of total loans.
Idiosyncratic risk	The standard deviation of the residuals of the market model over a quarter.
ln Assets	The natural log of the book value of the bank's total assets.
ln CEO compensation	The natural log of CEO total compensation, comprising the following: salary, bonus, other annual, total value of restricted stock granted, total value of stock options (using Black-Scholes), long-term incentive payouts, and all other total.
ln_AnalystNO	The natural log of the number of analysts issuing at least one RPS forecast for a firm over the previous 12 months.
Loan concentration	Total loans over total assets.
Loan loss reserves	Allowance for loan loss provision as a percentage of total loans.
Non-Caucasian audit	A dummy variable that takes the value of one if *at least one* of the audit committee members is non-Caucasian.

Non-Caucasian NED %	Percentage of *independent* non-Caucasian directors on the board of directors.
Nonexecutive directors %	Percentage of nonexecutive directors on the board.
Number of ethnic groups	The total number of ethnic groups (i.e. Caucasian, African, Hispanic, or Asian) among the independent board members (audit committee).
Post	A dummy variable that takes the value of one if the period is post-CFO transition and zero otherwise.
ROA	Earnings before extraordinary items scaled by total assets.
Strong	A dummy variable that takes the value one if the bank's regulatory capital is above 12% and zero otherwise.
Tenure	The standard deviation of nonexecutives' tenures on the board.
Tier 1 capital %	Tier 1 capital divided by risk-weighted assets.
Treated	A dummy variable that takes the value one if the bank is a man-followed-by-woman CFO transition bank and zero otherwise.
Z-score	(ROA + Capital)/standard deviation of ROA. ROA is calculated by dividing earnings before extraordinary items by total assets. Capital is calculated by dividing total equity by total assets. The standard deviation of ROA is calculated as the three-year moving standard deviation.

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