Organizational Memory and Bank Accounting Conservatism

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Abstract

This paper is the first to investigate the impact of banks' organizational memory of past history on the conservatism of accounting policy. Specifically, we investigate two types of bad time history: banks' undercapitalization and the failures of other banks during financial crises. Using a large sample of U.S. banks over the period 1997-2013, we find that both types of bad times are positively related to timelier recognition of earnings decreases versus earnings increases in accounting income. We also find that following bad times, banks increase their allowance for loan losses. The results of path analysis and survey research indicate that bad time memory of banks impacts bank accounting conservatism through CEO tenure and board of directors' tenure. Collectively, our results suggest that banks' organizational memory of bad times and macro-level banking crises lead to greater accounting conservatism in banks.

Key Words: Organizational Memory; Bank Accounting Conservatism; Bank History; Allowance for Loan Losses

1. Introduction

This paper is the first to examine the impact of organizational memory of banks on the conservatism of accounting policy. Specifically, we examine the organizational memory of banks regarding bad times history. Conservative accounting requires timelier recognition of losses and bad news than recognition of gains and good news (Basu 1997; Watts 2003; Beaver and Ryan 2005). This asymmetric timing of the recognition of loss will have a direct impact on profitability and capital ratios, which would then determine the stability of banks and the monitoring intensity imposed by bank regulators (Kanagaretnam, Lim and Lobo 2014; Bushman 2016). This is particularly salient in times of financial crisis when banks with aggressive reporting behaviors are more subject to capital crunches and liquidity risk than are banks whose reporting behaviors are more conservative (Beatty and Liao 2011; Bushman and Williams 2015). Given the potential significance of accounting conservatism, it is important to understand the channels that can affect variations in accounting conservatism among banks. In this paper, we investigate a channel that the accounting literature has overlooked: banks' bad times. We examine two types of bad times – bank-specific, and the weathering of a financial crisis.

The idea that a bank's experiences may affect its accounting policies builds on organizational learning theory, which posits that an organization can learn from its own experiences and from the successes and mistakes of others (Bandura 1977; Levitt and March 1988). Organizations can learn by encoding inferences from their experiences into routines that guide their subsequent behaviors (Levitt and March 1988). Bouwman and Malmendier (2015) have shown that bad times could lead to changes in lending and risk-taking. Following this line of reasoning, we expect a bank's bad times to affect its accounting policy.

Like most organizational routines and actions, accounting policy should be rooted in a bank's experiences and reactions to its past financial outcomes. However, the theories and

evidence suggest otherwise. On the one hand, when a bank has survived a crisis or threat of failure, it may become more pessimistic about its future, thus recognizing potential losses more timely. Thus, a bank should become more cautious and recognize more loan and lease loss allowances in the future. On the other hand, a bank that has survived financial crisis may become less concerned about future profitability and capital inadequacy, thereby adopting a more aggressive accounting policy by delaying loss recognition. This leaves the question of whether and how banks' bad times relate to accounting conservatism unanswered.

To test the predictions, we use a large sample of U.S. banks for 1997-2013. Our sample covers pre-crisis (1997-2006) and post-crisis years (2010-2013). To measure bank-specific bad times, we focus on undercapitalization. Following the FDIC (1992) and Dahl and Spivey (1995), we consider a bank undercapitalized in a certain year if it fails to maintain a Tier 1 risk-based capital ratio of 4% or a total risk-based capital ratio of 8% (after 1990). To measure economic crises, we use two macroeconomic proxies for the severity of statewide and countywide crises. The first proxy is the average fraction of the number of banks failed in a state or county in a certain year. The second is the average fraction of failed banks' assets in a state or county in that year. We measure accounting conservatism as the relationship between the change in net income and the lagged change in net income, allowing for differences in net income. Alternatively, we use the balance sheet's loan and lease loss allowance to represent conservative reporting. We estimate the ordinary least squares (OLS) regressions with state and year-fixed effects and with standard errors clustered at the bank level for the baseline tests, and use a matched sample differences-in-differences methodology to address the endogeneity concern.

Our results show that bad times, either bank-specific or economy-wide, are associated with increased bank accounting conservatism. In other words, banks that have been

undercapitalized and/or witnessed other banks fail in an economic crisis recognize their own losses more timely and recognize proportionately larger loan loss allowances. These findings support the prediction that, relative to healthy banks, banks that have survived crises might overreact to their bad times and become more pessimistic about their future. This finding holds in both pre- and post-crisis periods and for public and private banks.

We separately address two related questions: 1) In the face of bank-level or macro-level crises, how can bank managers and/or the board of directors take action to change bank accounting policy? 2) Is the change of accounting policy driven by managers and board monitoring (either or both), or auditors? We show both theoretically and empirically that the bad time memory of the managers and board of directors, rather than that of the external auditors, is mainly responsible for heightened accounting conservatism. In order to develop solid theories to build the logical link from organizational memory to accounting conservatism and understand how banks' accounting policy is driven by managers, boards, or auditors, we design the path analyses and a survey questionnaire to differentiate between the effect of bad time memory of managers, boards, and auditors, and to identify which channel plays the major role.

We develop theoretical hypotheses on the channels of managers, boards of directors, and auditors through which bad time experiences may impact bank accounting conservatism. We conduct empirical tests on each of the three channels to identify which channel plays the major role. Managers and boards of directors are inside stakeholders. We predict that bank managers and boards of directors have the most significant and direct impact on the relationship between bad time memories and bank accounting conservatism. Unlike managers and board directors, external auditors are outside stakeholders and do not have similar direct financial interest in their

audited banks, thus we predict that external auditors have less impact on the relationship between bad time memories and bank accounting conservatism.

Our channel analyses provide the quantitative measures of the impact on the relationship between bad time memories and bank accounting conservatism for the three parties (managers, boards of directors, and auditors). The results of path analysis of CEOs, boards of directors, and auditors show strong evidence that CEOs and boards of directors can retain memories of bad time experiences and can be motivated to adopt more conservative accounting policies to preempt future risks and failures. As the CEO tenure and board of directors' tenure lengthen, their bad time memories are more likely to lead to bank accounting conservatism. This is consistent with the expertise theory that CEOs and boards of directors with longer tenure accumulate unique knowledge about the banks' operations and are more likely to share their experiences of bad times with the banks. Thus, CEOs and boards of directors mandate more conservative accounting policies that provide a buffer against future losses and crises, thereby reducing litigation risks. However, we find weak evidence that auditors may anchor on bank-specific bad times from prior years by demanding greater accounting conservative policies in banks' future financial statements.

In order to confirm our empirical results from path analysis that the bad time memories of managers and boards of directors rather than those of external auditors is mainly responsible for the heightened accounting conservatism, we conduct a survey among senior U.S. bank executives (i.e., CEO, CFO, president, and chairman) to obtain corroborative anecdotal evidence/testimonies and identify which force plays the major role in impacting the relationship between memory of bad times and bank accounting conservatism. The responses from the survey participants generally confirm our findings that the bad time memories of managers and boards

of directors are the most important forces heightening bank accounting conservatism. The survey responses also provide evidence that the bad time memories of auditors can heighten bank accounting conservatism but with less impact. The survey questionnaire and participants' responses are presented in Appendix B and Appendix C.

Our study contributes to the literature in three important ways. First, we provide original evidence that banks adopt conservative accounting policies after experiencing bank-specific and economic-wide bad times. The literature identifies corporate governance, managerial overconfidence, and national culture as determinants of accounting conservatism (Black and Gallemore 2013; Leventis, Dimitropoulos and Owusu-Ansah 2013; Kanagaretnam et al. 2014). This evidence extends prior studies by showing that experiencing a bad time is a determinant of bank accounting conservatism. Second, our findings add new evidence to support organizational learning theory. We show that banks learn by reflecting on their own mistakes and those of others. In addition, accounting policies capture experiential lessons for banks. We provide empirical results and anecdotal evidence that the tenure of bank managers and boards of directors contributes to the bad times memory of banks. Third, our findings have important implications for bank managers and regulators. The timely recognition of loan and lease losses is critical to the banking industry because of the importance of exposure to losses from various types of risk as well as capital adequacy regulations, which affect a bank's ability to absorb losses and remain solvent for depositors (Kanagaretnam et al. 2014). Managers and regulators of banks that have rarely been exposed to a crisis should exercise greater caution in monitoring bank financial reporting, as accounting policies within these banks may become less conservative and harbor potential risks detrimental to the entire banking sector.

The rest of the paper is organized as follows. Section 2 reviews the literature, develops our hypotheses on the relationship between bad times and bank accounting conservatism through three channels (CEOs, boards of directors, and auditors), and presents our anecdotal evidence of survey. Section 3 explains our research design, including the measures and choices of empirical models to test our hypotheses. Section 4 describes our sample selection and data, including descriptive statistics and correlation analysis. Section 5 discusses our main results of empirical tests and path analysis. Section 6 provides additional test results. Finally, Section 7 presents our conclusions.

2. Literature Review and Hypothesis Development

Organizational memory (sometimes called institutional or corporate memory) is the accumulated body of data, information, and knowledge created in the history of an organization's existence. Organizations store information for re-use purposes. The value and importance of past information to an organization depends upon how well individuals can apply their experience from the past information to their current situations. Hall (1984) posits that an organization's memory is comprised of maps of causality, present architecture, current orientation or strategy, and standard procedures for reducing equivocality. These concepts can manifest in the banking industry. Previous negative history experienced by banks can cause the banks to revise or modify their current and future corporate strategies. It is possible that organizations are mental entities capable of thought (Sandelands and Stablein 1987: 136). Anderson (1980) argues that the acquisition, retention, and retrieval of knowledge and experience from memory influence subsequent individual behavior of an organization.

Organizations can apply their good experience from the past history to solve their current problems. They can also use their bad experience from the past lessons to prevent future failures.

Organizational learning theory posits that an organization can learn from its direct experiences as well as from the successes and mistakes of others (Bandura 1977; Levitt and March 1988).[1] Levitt and March (1988) argue that organizations can learn by encoding inferences from their experiences into routines that guide their subsequent behaviors.[2] Bouwman and Malmendier (2015) investigate the impact of a bank's history on its risk-taking behavior and find that past experiences of difficult times predict more careful lending and higher capitalization for banks in the long run, but that witnessing other banks in crisis does not induce such behavior. Following the same line of reasoning, we expect a bank's bad times to have a bearing on its accounting policy. We argue that, just like most organizational routines and actions, the accounting policy of a bank should be rooted in its experiences and represent feedback about its past financial outcomes. To investigate the influence of bad times on accounting policy choice, we focus on two types of bad times that a bank can have undergone: bank-specific bad times, and the macro-level crises in which the bank observes other banks' failure.

Accounting conservatism is the tendency of accountants to require more rigorous verification of good news than of bad news in financial statements; earnings reflect bad news more quickly than good news (Basu 1997). The theories and evidence suggest that accounting

[11] The institutional/individual memory literature argues that institutions/individuals put more weight on realizations experienced during their lifetimes than on other available historical data. Unique insights can emerge from this argument (Berger and Udell 2004; Malmendier and Nagel 2011, 2016): (1) young institutions/individuals, react more strongly to recent experiences than do older institutions/individuals, who already have a longer data series accumulated in their lifetime histories; (2) the memory of past experiences vanishes over time, but effects of extreme events can last for a long time. In this paper, we assume that young and older institutions/individuals react to recent experiences in a similar way due to the lack of data on young and older institutions/individuals.

[2] "Routines not only include the forms, rules, procedures, conventions, strategies, and technologies around which organizations are constructed and through which they operate, but also include the structure of beliefs, frameworks, paradigms, codes, cultures, and knowledge within the organization that buttress, elaborate, and contradict the formal routine" (Levitt and March 1988).

conservatism has a mitigating effect on managerial opportunism, bank capital crunches, liquidity risk and bankruptcy risk (Ball and Shivakumar 2005; Beatty and Liao 2011; Bushman and Williams 2015; Biddle, Ma and Song 2016; Watt 2003). Given its importance, many studies have investigated factors influencing accounting conservatism. For example, effective corporate governance structures could lead to greater bank accounting conservatism, whereas overconfident bank managers recognize smaller loan losses and delay their recognition (Black and Gallemore 2013; Leventis et al. 2013). In addition, Kanagaretnam et al. (2014) find that national culture affects bank-level accounting conservatism, with individualism negatively related and uncertainty avoidance positively related to accounting conservatism. Here, we investigate an alternative channel that has been unexplored by prior accounting literature: banks' bad times.

Our first hypothesis explores how bank-specific bad times influence accounting conservatism. Following the logic that insights derived from examining past experiences shape the perspectives of the organizational future (Sawy, Gomes and Gonzalez 1986), we argue that banks that have been involved in some specific crises may reflect on their individual experiences, and become more pessimistic. Motivated by their pessimistic beliefs, banks that had bad times may expect their earnings and/or loan quality to be lower than those of other banks and are therefore more sensitive to expected deterioration in earnings or loan quality. Thus, these banks may recognize their losses in a timelier manner. In addition, these troubled banks may become more careful in planning their policies and strategies in an attempt to avoid another financial crisis. By understating reported net income and assets and by reporting bad news promptly, accounting conservatism reduces the proportion of risks distributable to contracting parties, thus promoting precautionary savings, enhancing the capacity of repayment, and reducing bankruptcy

risk (Biddle et al. 2016). Besides, loan loss provisions and related allowances serve as a cushion against expected losses (Laeven and Majnoni 2003). A bank with delayed loan loss recognition will require higher provisions when it is in trouble, because it must cover both unexpected recessionary loan losses and loss overhangs from previous periods, thereby increasing concerns about future bank profitability and capital inadequacy (Beatty and Liao 2011; Bushman 2014). Moreover, insofar as delayed expected loss recognition is a manifestation of opportunistic behavior which degrades bank transparency (Bushman and Williams 2015), it increases financing frictions that restricts the ability of the bank to replenish depleted capital levels and increases the risk of bank failure (Bushman and Williams 2012). Taken together, we expect that banks with bad experiences, especially with undercapitalization, should recognize higher levels of expected losses and/or accelerate the recognition of expected losses to buffer against potential crisis and failure. Therefore, our first hypothesis is:

H1: Bank-specific bad times are associated with more conservative accounting.

In our second hypothesis, we investigate the effect of witnessing failures of other banks in economic-wide bad times on bank accounting conservatism. The theories and evidence lead to competing arguments. On the one hand, a bank that has seen other banks fail in an economic crisis may learn from those failures and become more conservative in its financial reporting. This is supported by our survey evidence that a group of senior U.S. bank executives claim that they have kept loan loss reserves higher after experiencing the previous downturns. For instance, even when delinquencies are still very low, they have bolstered their reserves dramatically based on proactive adjustments to forward looking qualitative factors. On the other hand, the bank may overstate its ability to survive the crisis and become less concerned about future profitability and

capital inadequacy issues, thus adopting a more aggressive accounting policy by delaying loss recognition in the long run.

On a similar topic that associates bad times with bank risk-taking, Bouwman and Malmendier (2015) find that seeing the failure of other banks in crisis does not induce more careful lending and higher capitalization. Thus, it seems that, as long as an economic crisis does not have extremely negative consequences for the surviving banks, these banks would not necessarily become more conservative. Given this line of reasoning, we address this open empirical question by stating in the alternative form:

H2: Macro-level bad times are not associated with accounting conservatism.

We develop our hypotheses on the channels of managers, boards of directors, and auditors, and we provide empirical evidence to support our predictions. We predict that bad time experiences could influence bank accounting conservatism through three potential stakeholders: managers, boards of directors, and auditors. Managers are responsible for the day-to-day operations of banks and for preparing financial statements, including reserves for loan losses. Thus, managers are the typical inside stakeholders of the banks.

With regard to the types of boards of directors, there are three categories of directors: 1) inside directors – current or former executives of the bank, 2) affiliated directors – who are not bank employees, but have other significant relationships or interests, and 3) independent or outside directors – who do not have any relationship with the bank. Inside directors typically include a bank's top executives, such as the CEO and CFO, as well as representatives of major shareholders, lenders, and additional stakeholders, such as institutional investors and labor unions. With few exceptions, the CEO almost always serves on the board of directors of a U.S.

bank. It is also common for additional executives (i.e., the former CEO) to serve on the board. Thus, the directors are considered inside stakeholders, at least partially.

Auditors are different from bank managers and boards of directors. They must be independent of their audited clients. Auditor independence is the cornerstone of the auditing profession and is the foundation of the public accounting profession. An external auditor must not own common shares, preferred shares, loans, mortgages, or any other financial interests in the bank to be audited. If the external auditor does not have any direct financial interest in the audited bank, then auditor independence can establish the credibility of the audit opinion on the bank's financial statements and internal controls. Although an external auditor is not supposed to have any direct financial interests in its audited bank, it may still have an indirect financial interest in the audited bank as it receives audit fees from the audited bank and has to maintain a good reputation, which depends on the quality of the audited bank's financial statements and the credibility of the audit opinion. Thus, external auditors are generally considered outside stakeholders.

We predict that bank managers and boards of directors have the most significant and direct impact on the relationship between bad time memories and bank accounting conservatism. Since external auditors do not have a direct financial interest in their audited banks, we predict that external auditors have less impact on the relationship between bad time memories and bank accounting conservatism. We conduct channel analyses to examine the extent to which three parties (managers, boards of directors, and auditors) impact the relationship between bad time memories and bank accounting conservatism.

It is possible that in the face of bank-level and macro-level crises, bank managers may take action to adopt a more conservative accounting policy. Skinner (1997) reports that managers

tend to alert the market about bad news before the release of quarterly earnings, suggesting that managers may attempt early disclosure of bad news to discourage lawsuits following such news. Shroff et al. (2013) also draw on lawsuit risk as an incentive for conservative accounting. Conservative accounting benefits managers by communicating inside bad news about financial distress to external stakeholders, thus decreasing the likelihood of being sued. In addition, CEOs with a long tenure may be interested in protecting their reputation (Diamond 1989), and aggressive accounting practices could tarnish this reputation. Recognizing bad news and unrealized losses is associated with efficient contracting with capital providers, and may motivate early managerial actions to correct operating and investment policies that could lead to potential future failures (Ahmed et al. 2002; Biddle et al. 2020).

Furthermore, organizational behavior research indicates that employee tenure and commitment are positively correlated (Buchanan 1974). Expertise theory suggests that CEOs with longer tenure accumulate unique knowledge and expertise about the bank and its environment, and are more likely to share the memory of bad times they have experienced with the bank. Additionally, longer tenure increases a CEO's power and influence in determining bank policies and operations (Muttakin et al. 2019). Their expertise and managerial power will assist long-serving CEOs to better understand the strengths and weaknesses of bank accounting systems and to quickly adopt appropriate accounting policies that help banks recover from prior crises and preempt future failures. In addition, bank managers may have bad time memories from previous years and take more proactive actions to bolster loan loss reserves, even when delinquencies are still very low for the bank, thus increasing bank accounting conservatism. We hypothesize that CEOs who have been in the position for a long time are more likely to employ conservative accounting policies that facilitate efficient contracting and early warning of bank

crises, thereby reducing managerial litigation and reputation risks. Our third hypothesis is as follows.

H3: Memory of bad times impacts bank accounting conservatism through CEO tenure.

Prior literature shows that boards of directors may be involved in shaping corporate accounting policy. For instance, Ahmed and Duellman (2007) find that the percentage of inside (outside) directors is related to lower (greater) accounting conservatism. Lara et al. (2009) find that firms with strong boards use conservative accounting numbers as an effective governance tool. Boards of directors may demand greater conservative accounting policies, which can help board members reduce agency costs arising from information asymmetry between bank managers and shareholders. The timely recognition of negative NPV investments provides a signal for the board to investigate both the investment and the managers, thus limiting heavy losses and extreme consequences from poor investment decisions (Ahmed and Duellman 2007).

Following Gopalan et al. (2019), we argue that a long-serving director tends to share his/her bad time experiences with the bank, which will likely affect his/her views on both the costs and probability of default. For example, witnessing the failures of other banks in macro-level crises or enduring the FDIC's oversight of his/her own bank due to undercapitalization might reinforce a director's opinion that default and failure are costly to the bank. Thus, boards of directors will strengthen the ratification and monitoring of managerial decisions by demanding more conservative accounting information in order to prevent potential bank bankruptcy. Based on the above arguments, our fourth hypothesis is as follows.

H4: Memory of bad times impacts bank accounting conservatism through board of directors' tenure.

It is also plausible that auditors may increase skepticism and conservatism after their audited banks or their peers have suffered crises in business operations in the recent past. Prior studies show that when audited companies experience bad times (e.g., posting large losses or declaring bankruptcies), auditors are more likely to be sued by related corporate stakeholders and to lose their good reputation (Lys and Watts 1994). DeFond et al. (2016) argue that conservative accounting decreases an auditor's business risk (i.e., litigation and reputation risk) by constraining management's tendency to systematically overstate earnings. Prior auditing research also shows that lawsuits against auditors are associated with overstatements of earnings (Kellogg 1984) and use of income-increasing discretionary accruals (Heninger 2001). Antle and Nalebuff (1991) argue that auditors tend to take a conservative stance in negotiations with clients, as rational conservatism acts as a protection against clients' upward bias in their financial statements. Moreover, auditing guidance on how auditors should reduce auditing risk in bad economic environments was released during the 2008-2009 financial crisis and afterwards (e.g., Public Company Accounting Oversight Board, 2008, 2010, 2011). These guidelines suggest that bank auditors should take action to increase audit conservatism during bad times.

We argue that when banks are in danger of undercapitalization or failure during economic crises, litigation and reputation risk will increase dramatically for auditors. Therefore, bank auditors may take an even more conservative position by asking their audit clients to disclose adverse information in a timelier manner, and thus reduce reputational risk or the risk of class action lawsuit. We also expect that auditors' demand for a client's accounting conservatism may vary with the auditors' tenure. On the one hand, as the auditor-client relationship lengthens, auditors can acquire superior client-specific information on items such as operations and accounting systems, thereby taking more proactive measures against potential risks and imposing

greater conservative accounting policies. We should observe a positive correlation between a bank auditor's tenure and the audited bank's accounting conservatism. In addition, DeFond and Subramanyam (1998) find that clients have incentives to resist excessive auditor conservatism by dismissing overly conservative auditors. If the bank switches from a very conservative auditor to a less conservative auditor, we should observe that an auditor's short tenure is associated with a low level of accounting conservatism for the bank client. On the other hand, auditors' long tenure may impair their independence due to economic bonding (Li 2010), and auditors may become reluctant to take appropriate action that may uncover potential failures and detect deficiencies in financial statements, thus eroding accounting conservatism. We should observe that an auditor's long tenure is associated with a low level of accounting conservatism for the bank client. Since the association between a bank auditor's tenure and the bank client's accounting conservatism can be positive or negative, we need to conduct an empirical test to examine whether bank auditors can enforce accounting conservatism on their clients based on their memory of bad times. Thus, we develop the fifth hypothesis as follows.

H5: Memory of bad times impacts bank accounting conservatism through auditor tenure.

Real-life anecdotal evidence will better under-grid our theoretical reasoning and corroborate whether our hypotheses on the bad time memory mechanism are consistent with real-life banking practices. We designed and conducted a survey on the channels through which bad time memory affects bank accounting conservatism.[3] First, we designed the survey questionnaire and obtained approval from the university's Research Ethics Board. Second, we sent out two survey questions to 806 senior bank executives in the U.S. (CEO, CFO, president, and chairman) via email and requested them to answer the survey questions that are central to

[3] We thank the anonymous reviewer and the associate editor for suggesting us to do this survey study and confirm our regression results with U.S. bank CEOs and CFOs.

understanding the channels through which bad time memory affects bank accounting conservatism.[4] We received responses from 13 senior bank executives located in Colorado, Florida, Georgia, Iowa, Massachusetts, North Dakota, Ohio, Oklahoma, Oregon, Texas, Virginia, and Wyoming.[5] They answered our survey questions based on their daily operations and personal experience; all respondents have worked in multiple banks and have been promoted to senior management positions within their banks. Our survey questionnaire is presented in Appendix B.

Our first survey question asked the senior bank executives to tell whether the heightened accounting conservatism policy is mainly driven and motivated by bank managers' incentives, board of directors' inside monitoring, and/or auditors' external monitoring. We gave survey participants eight different choices plus a "none of the above" choice. The participants could check all the choices that may have applied. The bank executives made the following choices for our first survey question:

- 7 executives chose "by bank managers' incentives"
- 6 executives chose "by board of directors' inside monitoring"
- 3 executives chose "by auditors' external monitoring"
- 2 executives chose "by bank managers' incentives and board of directors' inside monitoring"
- 1 executive chose "by board of directors' inside monitoring and auditors' external monitoring"

[4] Using the internet websites of the banks listed in Q4 2012 call report, we found that 601 banks out of 6,752 in the U.S. posted the emails of senior executives (i.e., CEO, CFO, president, and chairman) on their websites. We collected 969 emails of senior bank executives (424 CEOs, 301 CFOs, 174 presidents, and 70 chairmen). We sent our survey questionnaire emails to 969 senior bank executives; 163 emails were returned to us because 1) some banks' firewall systems blocked our emails; and 2) some bank executives were on vacation and sent automatic reply emails to us.

[5] The locations of these bank executives who responded to our survey questions are randomly distributed throughout the U.S.

- 5 executives chose "by bank managers' incentives and board of directors' inside monitoring and auditors' external monitoring"

According to our calculation of the cumulative sum (running totals), 14 choices (7+2+5) support our hypothesis H3 that the heightened accounting conservatism policy is driven and motivated mainly by bank managers' incentives; 14 choices (6+2+1+5) support our hypothesis H4 that the heightened accounting conservatism policy is driven and motivated mainly by board of directors' inside monitoring, and 9 choices (3+1+5) support our hypothesis H5 that the heightened accounting conservatism policy is driven and motivated by auditors' external monitoring.[6] Consistent with our hypotheses and path analysis results, the survey participants' choices indicate that bank managers and boards of directors are the most important and powerful groups who can heighten a bank's policy of accounting conservatism. Auditors are less influential in driving the accounting conservatism policy, but they do exert pressure on managers and boards of directors to change the accounting conservatism policy to some extent. This anecdotal evidence indicates that bank managers and boards of directors are inside stakeholders who directly control a bank's operations and financial reporting, whereas auditors are outside stakeholders who can only suggest managers to follow certain accounting rules and regulations. Managers have to make their own decisions to change accounting policies, either by following auditors' suggestions, partially following auditors' suggestions, or dismissing auditors' suggestions.

[6] Alternatively, we remove the duplicates in each executive's choices and add up the choices of the 13 executives. We get 10 choices supporting "by bank managers' incentives", 10 choices supporting "by board of directors' inside monitoring", and 8 choices supporting "by auditors' external monitoring." Some bank executives did not differentiate between federal auditors and CPA firm auditors. They stated that federal auditors are important forces driving bank accounting conservatism by exerting pressure on managers, boards, and auditors and guiding them to increase reserves for loan and lease losses. Thus, part of the 8 choices supporting "by auditors' external monitoring" actually support federal auditors' external monitoring.

Our second survey question asked the senior bank executives to illustrate the mechanism by which bad time memory of the bank's managers, boards of directors, and/or auditors leads to heightened accounting conservatism. Collectively, anecdotal evidence from senior bank executives supports our hypotheses and path analysis results that the relationship between bad time memory of managers and subsequent bank accounting conservatism is significantly driven and motivated by the inside monitoring of bank managers and boards of directors although such relationships may be influenced by the external monitoring of auditors to a certain extent. The detailed responses collected from senior bank executives are presented in Appendix C.

We quote below some of the statements from the senior bank executives:

- The conservative policy is mostly driven and motivated by our bank management and directors.
- We have kept our loss reserves higher at this point in the economic cycle than we had in the previous cycle. Our equity requirements for credit facilities are elevated today. We have proactively suspended repurchases of our shares to ensure that we have additional capital to survive a downturn.
- The mechanism by which bad time memory of the bank's management team and Board leads to higher accounting conservatism is a combination of both the desire to not repeat the negative repercussions and the learning that has taken place during stressed periods.
- Managers take two types of actions: 1) credit standards (acceptable DSCR, credit scores, collateral LTV, etc.) and 2) qualitative factors in the ALLL calculation change. The analysis of the latter is done at least quarterly, regardless of economic activity. The

former is more ad hoc and is usually driven by management's desire to protect assets and income on the downside and by the board of directors on the upside.[7]

- Internal management monitoring is an equally important factor to ensure an adequate control environment. The Board's collective memory of the economic impact of economic downturns on loan portfolio performance has led to a more aggressive reserve calculation well in advance of any loss being incurred.
- We have significant insider ownership (over 50%), which allows us to plan long-term as opposed to short-term decision making. We believe our long-term planning provides greater value to all of our shareholders. Our conservative accounting policy stems from our experience from the oil crisis of the 1980s, long-term planning, and providing for expected losses under CECL.[8]
- Our board ensures that we do not do anything that will not be pleasing to the examiners. The board looks at things very closely to ensure that we are able to get our change controls approved without any issues.
- The banking industry regulatory body and external auditors react to economic downturns and require a more conservative loan loss reserve.
- This generally gets initiated in our forecasting and general economic outlook discussions. Those discussions drive the assumptions we make when we forecast financial performance (quarterly) and develop strategic plans (usually three-year plans) or when we are developing budgets for the upcoming fiscal year.

Multiple bank executives in our survey stated that regulators and federal auditors are important forces driving bank accounting conservatism by exerting pressure on managers,

[7] DSCR is debt service coverage ratio; LTV is loan-to-value ratio; and ALLL is allowance for loan and lease losses.
[8] CECL is current expected credit losses.

boards, and auditors and guiding them to increase reserves for loan and lease losses. We quote below some of their statements:

- The conservative policy is often derived from prior experience with, in our opinion, overzealous regulators from the past.
- Sometimes bank managers were "guided" to increase reserve levels through an interpretation of their reserve for loan and lease losses by a regulator. The regulators would recommend changes to a calculation that had passed the test of several prior exam cycles.
- Accounting policy is driven by regulators and AICPA accounting boards.
- FDIC examiners' appetite for "hot" topics drives director and audit attitudes.
- The U.S. banking industry anticipates and reacts to real or perceived expectations of federal supervisory agencies.
- The federal audits make compliance a challenge. We have to hire additional staff and/or take management's focus to just maintain federal banking compliance.

3. Research Design

Like Bouwman and Malmendier (2015), we define a bank-specific bad time as a bank being undercapitalized. Bouwman and Malmendier (2015) examine whether past macro-economic and bank-specific shocks experienced and survived by a bank affect its current capitalization and risk-taking. They find that banks that have survived periods of undercapitalization tend to implement higher equity ratios and take less risk in the periods following such crises, as measured by net charge-offs, non-performing loans, or earnings volatility 10-25 years later. However, observing high rates of failure among other banks stirs

banks in the opposite direction. Their evidence suggests that institutional memory affecting banks' capital and risk-taking.

Bouwman and Malmendier (2015) examine macro-level and bank-level bad times. However, the proxies for bad times employed in our paper differ from Bouwman and Malmendier (2015). Bouwman and Malmendier (2015) use nation-wide and statewide bank failures. We use statewide and countywide failures. Bouwman and Malmendier (2015) measure bad times as the cumulative bank failures over the life-to-date of the bank as of a specific bank-year. We use failures in the prior period. For firm-specific bad times, Bouwman and Malmendier (2015) use whether, and the number of times, the bank has been undercapitalized over the most recent 25 years of its life. They split the bank's history into four broad horizons (1-3 years, 4-6 years, 7-9 years, and 10-25 years ago). They only find an effect in the distant past, 10-25 years ago. We use only whether the bank was undercapitalized in the prior year. Bouwman and Malmendier (2015) examine the equity ratios and risk-taking of banks after the crises. Since equity ratios and risk-taking are continuous variables that do not change significantly in every year, Bouwman and Malmendier (2015) need to detect the effect of undercapitalization on bank real activities based on the cumulative experiences of the bank, not the experiences in any one particular year. However, we focus on experiences of the prior year only for the banks because accounting conservatism policy of a bank can change significantly in any particular year. Thus, the effect of undercapitalization on accounting conservatism is detectable a year later.[9]

Following the FDIC (1992) and Dahl and Spivey (1995), a bank is undercapitalized ($UNCAP$) in a certain year if it fails to maintain a Tier 1 risk-based capital ratio of 4% or a total

[9] We broaden the tests to include the bank's cumulative history in the past three or five years, as in Bouwman and Malmendier (2015). Our main results remain robust to these additional tests.

risk-based capital ratio of 8% (after 1990).[10] To measure the macro-level bad times that a bank has witnessed, we use two sets of proxies that capture both the statewide and the countywide crisis. Our first proxy, $FNMR$, is the average fraction of the number of banks that failed in the state (county) in a given year. This is calculated by the number of bank failures in a state (county) scaled by the number of all banks in the state (county). Our second proxy, $FATR$, is the average fraction of failed banks' assets in a state (county) in a given year. It is calculated by the total assets of failed banks in a state (county) scaled by the total assets of all banks in the state (county). The higher the ratios of $FNMR$ and $FATR$, the more severe statewide (countywide) bad times a bank has experienced.

We use two metrics to capture accounting conservatism. We first examine the relationship between the change in net income and the lagged change in net income, allowing for differences in positive and negative changes in net income. This metrics is based on the principle of conservatism that is viewed as requiring higher verification standards for recognizing good news than bad news (Basu 1997; Nichols, Wahlen and Wieland 2009), resulting in asymmetric timeliness of recognition of earnings decreases versus earnings increases (Kanagaretnam et al. 2014). Our model for testing accounting conservatism using aggregate earnings follows Ball and Shivakumar (2005), Nichols et al. (2009), and Kanagaretnam et al. (2014).

To test our first hypothesis on the effect of bank-specific bad times on bank accounting conservatism, we estimate the regression using Equation (1).

$$\Delta ROA_t = \alpha_0 + \alpha_1 D\Delta ROA_{t-1} + \alpha_2 \Delta ROA_{t-1} + \alpha_3 UNCAP_{t-1} + \alpha_4 D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_5 D\Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_6 \Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_7 D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_8 SIZE_{t-1} + \alpha_9 SIZE_{t-1} * D\Delta ROA_{t-1} + \alpha_{10} SIZE_{t-1} * \Delta ROA_{t-1} + \alpha_{11} SIZE_{t-1} *$$

[10] Tier-1 risk based capital ratio is the ratio of a bank's "core capital" to its risk-weighted assets. Risk-weighted assets are constructed by assigning different weights to assets with different levels of risk and summing the totals. The tier-1 risk-based-capital ratio measures how much buffer a bank has as a percentage of its riskiness. We focus on this particular ratio because it excludes more "exotic" elements from the calculation of capital and so serves as a better approximation of an adequate capital ratio.

$$D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_{12} LOAN_t + \alpha_{13} TIER1_t + \alpha_{14} EBTP_t + \alpha_{15} \Delta NPL_t + \alpha_{16} PUBLIC_t + \alpha_{17} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (1)$$

where ΔROA is the change in net income scaled by lagged total assets; $D\Delta ROA$ is a dummy variable that equals 1 if the change in net income is negative, and 0 otherwise; $UNCAP$ is undercapitalization, a dummy variable that equals 1 if the Tier 1 risk-based capital ratio is less than 4% or the total risk-based capital ratio is less than 8% (after 1990), and 0 otherwise; $SIZE$ is the natural log of total assets; $Loan$ is the total loans scaled by total assets; $TIER1$ is the Tier 1 risk-based capital ratio, calculated by Tier 1 capital scaled by total risk-weighted assets; ΔNPL is the change of nonperforming loans scaled by total loans; $EBTP$ is the earnings before loan loss provisions and taxes scaled by lagged total assets; $PUBLIC$ is a dummy variable that equals 1 for a public bank, and 0 otherwise; ΔUEP is the change in unemployment rate of the state where the bank's headquarter is located over the year. We also include year-fixed effects.

Under conditional conservatism, economic gains must meet a higher verification threshold to be recognized in accounting income, so earnings decreases should be timelier and less persistent than earnings increases (Nichols et al. 2009), indicating a positive value for α_2 and a negative value for α_4. Since H1 predicts that bank undercapitalization is associated with higher levels of accounting conservatism, we expect α_7, the coefficient on $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1}$, to be negative for Equation (1). To test our second hypothesis on the effect of macro-level bad times on bank accounting conservatism, we estimate the regression using Equations (2) and (3).

$$\Delta ROA_t = \alpha_0 + \alpha_1 D\Delta ROA_{t-1} + \alpha_2 \Delta ROA_{t-1} + \alpha_3 FNMR_{t-1} + \alpha_4 D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_5 D\Delta ROA_{t-1} * FNMR_{t-1} + \alpha_6 \Delta ROA_{t-1} * FNMR_{t-1} + \alpha_7 D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FNMR_{t-1} + \alpha_8 SIZE_{t-1} + \alpha_9 SIZE_{t-1} * D\Delta ROA_{t-1} + \alpha_{10} SIZE_{t-1} * \Delta ROA_{t-1} + \alpha_{11} LOAN_t + \alpha_{12} TIER1_t + \alpha_{13} EBTP_t + \alpha_{14} \Delta NPL_t + \alpha_{15} PUBLIC_t + \alpha_{16} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (2)$$

$$\Delta ROA_t = \alpha_0 + \alpha_1 D\Delta ROA_{t-1} + \alpha_2 \Delta ROA_{t-1} + \alpha_3 FATR_{t-1} + \alpha_4 D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_5 D\Delta ROA_{t-1} * FATR_{t-1} + \alpha_6 \Delta ROA_{t-1} * FATR_{t-1} + \alpha_7 D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FATR_{t-1} + \alpha_8 SIZE_{t-1} + \alpha_9 SIZE_{t-1} * D\Delta ROA_{t-1} + \alpha_{10} SIZE_{t-1} * \Delta ROA_{t-1} + \alpha_{11} LOAN_t + \alpha_{12} TIER1_t + \alpha_{13} EBTP_t + \alpha_{14} \Delta NPL_t + \alpha_{15} PUBLIC_t + \alpha_{16} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (3)$$

where $FNMR$ is the number of statewide (countywide) bank failures scaled by the number of all banks in the state (county); $FATR$ is the total assets of statewide (countywide) failed banks scaled by the total assets of all banks in the state (county). We follow Bouwman and Malmendier (2015) to define the *FNMR* and *FATR* variables. Based on H2 that economic-wide crises are not associated with accounting conservatism, we expect α_7 to be insignificant for Equations (2) and (3).

We then turn to the balance sheet and use the ratio of loan and lease loss allowances scaled by total loans as the second measure to capture accounting conservatism. Banks that are more conservative are expected to recognize more allowance of loan and lease loss provisions relative to their loans. Fitch (2009) notes that the performing portfolio needs to be reserved against for expected risk, although accounting standards may not allow for this treatment. Beatty and Liao (2011) and Kanagaretnam et al. (2014) use the loan loss allowance ratio (*LLA*) to capture the balance sheet perspective of accounting conservatism.[11]

$$LLA_t = \beta_0 + \beta_1 UNCAP_{t-1} + \beta_2 SIZE_{t-1} + \beta_3 LOAN_t + \beta_4 TIER1_t + \beta_5 EBTP_t + \beta_6 \Delta NPL_t + \beta_7 PUBLIC_t + \beta_8 \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (4)$$

$$LLA_t = \beta_0 + \beta_1 FNMR_{t-1} + \beta_2 SIZE_{t-1} + \beta_3 LOAN_t + \beta_4 TIER1_t + \beta_5 EBTP_t + \beta_6 \Delta NPL_t + \beta_7 PUBLIC_t + \beta_8 \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (5)$$

$$LLA_t = \beta_0 + \beta_1 FATR_{t-1} + \beta_2 SIZE_{t-1} + \beta_3 LOAN_t + \beta_4 TIER1_t + \beta_5 EBTP_t + \beta_6 \Delta NPL_t + \beta_7 PUBLIC_t + \beta_8 \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (6)$$

[11] Beatty and Liao (2011) scale the loan loss allowances by non-performing loans. Our results are robust to this minor difference.

where *LLA* is loan loss allowance scaled by total loans. Under this measure, H1 predicts β_1 to be significantly positive for Equation (4), whereas H2 predicts that β_1 is not significant for Equations (5) and (6).

We interpret the size of *LLA* as a measure of conservatism. The *LLA* is influenced by a variety of factors, including the history of loan loss provisions and the history of loan charge-offs. We recognize that the *LLA* is the accumulation of past accounting decisions, and at the same time, we explain the bad times as the cumulative experience of the past years' operations. The bad times of banks are not depending solely on last year's performance.

4. Sample and Data

Our sample spans the period 1997-2013. Our data comes from two sources. We obtain information on the number and the assets of failed banks from the FDIC's website (https://www.fdic.gov/bank/individual/failed/banklist.html). Bank-level financial information including data to construct accounting conservatism variables is retrieved from the Reports of Condition and Income (Call Reports) that banks file with their primary regulator, the Federal Reserve, the Federal Deposit Insurance Corporation, or the Office of the Comptroller of the Currency. Call reports are available at the Federal Reserve of Chicago's website (https://www.chicagofed.org/banking/financial-institution-reports/commercial-bank-data). The Call Reports have the advantage of providing financial information not only for public banks but also for private banks, which are the majority of banks in our study. We delete all observations without enough financial information to construct our variables. In the baseline analysis, we focus on the entire 17-year period. In additional analyses, we will investigate the pre- and post-

crisis subsamples separately. All bank-level continuous variables are winsorized at the top and bottom 1 percentile to mitigate the effects of any outliers.

Table 1 reports the descriptive statistics. Panel A presents the distribution of variables used in the earnings changes regression. The sample consists of 128,381 bank-year observations for the earnings changes test. The mean change in return on assets (ΔROA_t) is -0.01%, and 50.6% of the sample banks report a decline in net income. Panel B presents the distribution of variables used in the loan loss allowance regression. It includes 130,853 bank-year observations for the loan loss allowance test. Loan loss allowance is 1.5% of total loans. For the bank-specific bad time variable ($UNCAP_{t-1}$), 0.2% of all banks experienced undercapitalization in the prior year. In terms of the macro-level bad time variables $FNMR_{t-1}$, 0.4% of banks witnessed statewide bank failures in the prior year, and 0.3% of banks witnessed countywide bank failures in the prior year.[12] The average fraction of failed banks' assets $FATR_{t-1}$ is 0.3% (0.5%) of the total assets in statewide (countywide) crises.

[Table 1]

Table 2 presents the Pearson correlation matrix between the variables used in the regression. The loan loss allowance ratio (LLA_{it}) is positively and significantly correlated with $UNCAP_{it-1}$, consistent with our prediction that undercapitalization is associated with more conservative accounting. In addition, we find that LLA_{it} is positively and significantly related to both statewide and countywide $FNMR_{it-1}$ and $FATR_{it-1}$ at the 1% level, suggesting that a bank which has witnessed macro-level banking crises is more conservative by increasing the level of allowance for loan and lease losses.

[12] The incidence of bad times is low, based on Table 1, Panel A. Undercapitalization occurs in 0.2% of bank-years, and the average percentage of banks to fail in a state in any given year is 0.3%. This makes it difficult to assess the economic significance of the results, as well as whether the results might generalize to bad times more broadly defined. The results may be driven by a small set of observations. This compounds the concerns about generalizability inherent in focusing exclusively on financial institutions.

[Table 2]

In Table 3, we present the univariate comparisons of the mean values of LLA_{it} for bank-years with above and below median bad times based on different bad time proxies. We document that compared with bank-years with below median $UNCAP_{it-1}$, those with above median $UNCAP_{it-1}$ have a significantly higher loan loss allowance ratio (t-value = 18.12), lending support to our H1 that bank-specific bad times are associated with greater accounting conservatism. We also find that the mean value of LLA_{it} is higher for bank-years with above median statewide and countywide $FNMR_{it-1}$ and $FATR_{it-1}$, indicating that macro-level bad times are similarly related to greater accounting conservatism.

[Table 3]

5. Main Empirical Analyses

Table 4 presents the multivariate regression results for testing the relationship between bank-specific bad times and accounting conservatism. Column 1 reports the result of the earnings changes regression using Equation (1). Under conditional conservatism, we expect asymmetry in the timeliness of recognition of earnings decreases versus earnings increases (Nichols et al. 2009). We expect a lower verification threshold and more timely recognition of earnings decreases than increases. Thus, economic gains must meet a higher verification threshold to be recognized in accounting income, so earnings increases are more persistent than earnings decreases (Kanagaretnam et al. 2014). Consequently, we predict a positive value for α_2 and a negative value for α_4. The negative value of α_4 reflects the extent of accounting conservatism. Our main predictions are that banks in undercapitalization situations have more conservative

accounting. Specifically, we predict that the coefficient α_7 on $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1}$ will be negative and significant.

Most of the estimated coefficients in Table 4 are consistent with those reported in Nichols et al. (2009) and Kanagaretnam et al. (2014). Specifically, Column 1 shows that the coefficient α_2 on ΔROA_{t-1} is positive and significant at the 1% level (*t*-value = 2.80) and the coefficient α_4 on $D\Delta ROA_{t-1} * \Delta ROA_{t-1}$ is negative and significant at the 1% level (*t*-value = -7.43), consistent with banks being more timely in reporting earnings decreases than earnings increases. Hypothesis 1 predicts that the extent of accounting conservatism increases after bank-specific bad times. Consistent with this prediction, the coefficient α_7 on $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1}$, is negative and significant at the 5% level (*t*-value = -2.01), suggesting that recognition of earnings decreases is even more timely than recognition of earnings increases after banks experience undercapitalization situations in the previous year (i.e., $UNCAP_{t-1}$ = 1). For control variables, the coefficients on $EBTP_t$ and $PUBLIC_t$ are positive and significant, implying that banks with higher pre-managed earnings and public banks have more increases in earnings.

Column 2 of Table 4 reports the results of the loan loss allowance regression using Equation (4). The coefficient on $UNCAP_{t-1}$ is significantly positive at the 1% level (*t*-value = 8.32), suggesting that financial reporting is more conservative for undercapitalized banks. As for economic significance, compared with capitalized banks, undercapitalized banks experience an increase in loan loss allowance of 0.9% of their total loans. These results support our H1 that accounting conservatism is greater among banks that have been undercapitalized. With regard to control variables, we find that LLA_{it} is negatively associated with $LOAN_{it}$ and positively

associated with ΔNPL_{it}, implying that banks with a lower proportion of loans and a higher change of non-performing loans recognize greater loan loss allowance.

[Table 4]

Table 5 presents the OLS regression results for testing the relationship between macro-level bad times and accounting conservatism. Panel A shows the association of earnings changes with $FNMR_{it-1}$ as macro-level bad time measure using Equation (2). Of primary interest is the coefficient α_7 on $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FNMR_{t-1}$. We find that α_7 is negative and significant at the 1% level when $FNMR_{it-1}$ is measured both statewide and countywide (*t*-value = -13.42 and -2.70, respectively), indicating that bank recognition of bad news is timelier in a state or a county that has a higher bank failure rate in the prior year. Panel B shows the association of earnings changes with $FATR_{it-1}$ as macro-level bad time measure using Equation (3). The primary variable of interest, $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FATR_{t-1}$, is negatively and significantly associated with ΔROA_t at both the state and county levels (*t*-value = -9.98 and -4.59, respectively), implying that banks recognize earnings declines more timely after the state or county has experienced bank crashes in the previous year. Panel C depicts the association between LLA_{it} and $FNMR_{it-1}$ of Equation (5). Panel D depicts the association between LLA_{it} and $FATR_{it-1}$ of Equation (6). In Panel C, we find that both statewide and countywide $FNMR_{it-1}$ are positively and significantly related with LLA_{it} at the 1% level (*t*-value = 17.41 and 8.25, respectively), In Panel D, we find that both statewide and countywide $FATR_{it-1}$ are positively and significantly related with LLA_{it} at the 1% level (*t*-value = 14.82 and 3.56, respectively). Our findings indicate that banks exposed to statewide or countywide crises recognize proportionately larger loan loss allowance than banks that have not been exposed to

financial crises. Collectively, our results indicate that like bank-specific bad times, macro-level bad times are associated with greater accounting conservatism.

[Table 5]

Unobservable time-series changes that are contemporaneous with undercapitalization may also affect accounting conservatism. To remove the effect of contemporaneous shocks, we use a matched sample differences-in-differences methodology. In the first stage, we match each undercapitalized bank to a benchmark bank in the same state that is not undercapitalized, according to the propensity score matching (PSM) procedure proposed by Rosenbaum and Rubin (1983). This method creates a capitalized control sample with the same predicted probabilities of being undercapitalized. To calculate the propensity scores, we estimate the regression using Equation (7):

$$M\_UNCAP_t = \lambda_0 + \lambda_1 M\_SIZE_{t-1} + \lambda_2 M\_LOAN_t + \lambda_3 M\_EBTP_t + \lambda_4 M\_NPL_t + \lambda_5 M\_CO_t + \sum State\_Indicators + \sum Year\_Indicators \quad (7)$$

where *M_UNCAP* is the mean value of *UNCAP* for a bank in the sample period; *M_SIZE* is the mean value of *SIZE* for a bank in the sample period; *M_LOAN* is the mean value of *LOAN* for a bank in the sample period, *M_EBTP* is the mean value of *EBTP* for a bank in the sample period; *M_NPL* is the mean value of *NPL* for a bank in the sample period; and M_CO is the mean value of loan charge-offs scaled by lagged total loans for a bank in the sample period.

Panel A of Table 6 provides the regression results of the propensity score matching process. M_UNCAP_t is positively and significantly associated with M_SIZE_{t-1}, M_LOAN_t, M_NPL_t, and M_CO_t, indicating that banks with higher proportion of total assets, loan-making activities, non-performing loans and loan charge-offs are more likely to be undercapitalized. In contrast, M_UNCAP_t is negatively and significantly related to M_EBTP_t, suggesting that greater earnings before loan loss provisions is associated with a lower likelihood of undercapitalization.

In the second stage, we estimate the following regression using a sample that pools both the undercapitalized and matched banks.

$$\Delta ROA_t = \alpha_0 + \alpha_1 D\Delta ROA_{t-1} + \alpha_2 \Delta ROA_{t-1} + \alpha_3 UNCAP_{t-1} + \alpha_4 POST_t + \alpha_5 D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_6 D\Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_7 D\Delta ROA_{t-1} * POST_t + \alpha_8 \Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_9 \Delta ROA_{t-1} * POST_t + \alpha_{10} UNCAP_{t-1} * POST_t + \alpha_{11} D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1} + \alpha_{12} D\Delta ROA_{t-1} * \Delta ROA_{t-1} * POST_t + \alpha_{13} D\Delta ROA_{t-1} * UNCAP_{t-1} * POST_t + \alpha_{14} D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1} * POST_t + \alpha_{15} SIZE_{t-1} + \alpha_{16} SIZE_{t-1} * D\Delta ROA_{t-1} + \alpha_{17} SIZE_{t-1} * \Delta ROA_{t-1} + +\alpha_{18} SIZE_{t-1} * D\Delta ROA_{t-1} * \Delta ROA_{t-1} + \alpha_{19} LOAN_t + \alpha_{20} TIER1_t + \alpha_{21} EBTP_t + \alpha_{22} \Delta NPL_t + \alpha_{23} PUBLIC_t + \alpha_{24} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (8)$$

$$LLA_t = \beta_0 + \beta_1 UNCAP_{t-1} + \alpha_2 POST_t + \beta_3 UNCAP_{t-1} * POST_t + \beta_4 SIZE_{t-1} + \beta_5 LOAN_t + \beta_6 TIER1_t + \beta_7 EBTP_t + \beta_8 \Delta NPL_t + \beta_9 PUBLIC_t + \beta_{10} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (9)$$

Where $POST$ is a dummy variable that equals 1 for the bank years after an undercapitalization occurs, and 0 otherwise. This methodology controls for unobservable differences between undercapitalized and matched banks. Our estimates of α_{14} in Equation (8) and β_3 in Equation (9) capture the undercapitalization effect, representing the change in accounting conservatism specific to undercapitalized banks. H1 predicts that bank accounting becomes more conservative in the wake of a bank-specific crisis. Hence, we expect α_{14} to be negative for Equation (8), and β_3 to be positive for Equation (9).

The results of the second stage regressions are reported in Panel B of Table 6. For Equation (8), we find a negative and significant coefficient on $D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1} * POST_t$, indicating that compared with matched banks, undercapitalized banks recognize earnings decline more timely than earnings increase after undercapitalization. In Column 2, for Equation (9), we find that the coefficient on $UNCAP_{t-1} * POST_t$ is positive and significant at the 1% level (t-value = 9.49), suggesting that undercapitalized banks have an additional net increase in the ratio of loan loss allowance to total loans (LLA_t) after the year of

undercapitalization. These results support our prediction that accounting conservatism is higher in banks that have survived bank-specific crisis.

[Table 6]

Our channel analyses provide the quantitative measures of the impact on the relationship between bad time memories and bank accounting conservatism for the three channels (managers, boards of directors, and auditors). To explore the channel of CEO tenure, we follow DeFond et al. (2016) and use path analysis to decompose the relationship between bad time proxy (the source variable) and accounting conservatism (the outcome variable) into the direct path and the indirect path via CEO tenure (the channel variable). Following Garvey and Milbourn (2006), we define CEO tenure (CEOTEN) as the difference between the current fiscal year end and the date on which the CEO took office, measured in years. The CEO tenure data are obtained from the ExecuComp database.

We show the results of the path analysis for CEO tenure in Figure 1, where we present standardized path coefficients and their significance levels. The path coefficients of the bank-specific bad time proxy ($\mathrm{UNCAP}_{\mathrm{it-1}}$) and the state-level bank crisis proxies ($\mathrm{FNMR}_{\mathrm{it-1}}$ and $\mathrm{FATR}_{\mathrm{it-1}}$) attributable to the direct path are significantly positive at the 1% level.[13] Interestingly, we find that a significant portion of the effects of bad time memory on accounting conservatism can be attributable to the indirect path through the channel variable $\mathrm{CEOTEN}_{\mathrm{it}}$. The path estimates of $\mathrm{UNCAP}_{\mathrm{it-1}}$, $\mathrm{FNMR}_{\mathrm{it-1}}$ (statewide), $\mathrm{FNMR}_{\mathrm{it-1}}$ (countywide), $\mathrm{FATR}_{\mathrm{it-1}}$ (statewide), and $\mathrm{FATR}_{\mathrm{it-1}}$ (countywide) on $\mathrm{CEOTEN}_{\mathrm{it}}$ are 0.051, 0.081, 0.066, 0.067, and 0.022, respectively, suggesting that the bank-specific low capitalization and macro-level bank crisis

[13] In path analysis where there is no variation among our sample for the dummy variable $UNCAP$ due to the significantly reduced number of observations after filtering the sample by CEO tenure, board tenure, or auditor tenure, we define $UNCAP$ as the negative of the Tier 1 risk-based capital ratio, so that a high value of $UNCAP$ represents bank-specific bad times − low capitalization.

survival is associated with longer CEO tenure. Four path coefficients of $\mathrm{CEOTEN_{it}}$ on $\mathrm{LLA_{it}}$ are significantly positive at the 1% level and one path coefficient of $\mathrm{CEOTEN_{it}}$ on $\mathrm{LLA_{it}}$ is significantly positive at the 5% level, implying that longer CEO tenure is associated with increased accounting conservatism. Overall, this path analysis on CEO tenure confirms our prediction that bank managers/executives are an important channel through which bad time memory heightens bank accounting conservatism.

[Figure 1]

Figure 2 shows our results of the path analysis for board of directors' tenure. We follow Golden and Zajac (2001) to define board of directors' tenure (BODTEN) as the average number of years the directors have served on the board. We obtain board of directors' tenure data from the Institutional Shareholder Services (ISS) database. We find that bad time proxies can significantly influence bank loan loss allowances through board of directors' tenure. The path coefficients of $\mathrm{UNCAP_{it-1}}$, $\mathrm{FNMR_{it-1}}$(statewide),$\mathrm{FNMR_{it-1}}$(countywide), $\mathrm{FATR_{it-1}}$ (statewide), and $\mathrm{FATR_{it-1}}$ (countywide) on $\mathrm{BODTEN_{it}}$ are 0.019, 0.167, 0.100, 0.157, and 0.156, respectively, all of which are statistically significant at the 1% level. All the path coefficients of $\mathrm{BODTEN_{it}}$ on $\mathrm{LLA_{it}}$ are significantly positive at the 1% level. Collectively, the path analysis on board of directors' tenure confirms our prediction that long-serving boards of directors can increase bank accounting conservatism by sharing their bad time experiences with the banks.

[Figure 2]

Figure 3 presents the results of the path analysis for auditor's tenure. Our auditor's tenure data were obtained from the AuditAnalytics database. For the direct path, we report that all bad time proxies ($\mathrm{UNCAP_{it-1}}$, $\mathrm{FNMR_{it-1}}$, and $\mathrm{FATR_{it-1}}$) are positively and significantly associated with $\mathrm{LLA_{it}}$. For the indirect path, bad time experiences of banks can significantly extend the term

of client-auditor relationship (AUDTEN). We find that bad time proxies can significantly influence bank loan loss allowances through auditor's tenure. The path coefficients of $\mathrm{UNCAP}_{\mathrm{it}-1}$, $\mathrm{FNMR}_{\mathrm{it}-1}$ (statewide), $\mathrm{FNMR}_{\mathrm{it}-1}$ (countywide), and $\mathrm{FATR}_{\mathrm{it}-1}$ (statewide) on $\mathrm{AUDTEN}_{\mathrm{it}}$ are 0.030, 0.022, 0.017, and 0.011, respectively, all of which are statistically significant at the 1% level. However, the path coefficient of $\mathrm{FATR}_{\mathrm{it}-1}$ (countywide) on $\mathrm{AUDTEN}_{\mathrm{it}}$ is 0.002, which is not significant even at the 10% level. We simultaneously find that auditor's tenure does not significantly impact bank loan loss allowances, except for the banks that have suffered from one type of bank-specific bad time experience: undercapitalization.

[Figure 3]

In summary, the empirical results of testing the channels of CEOs, boards of directors, and auditors using path analysis show strong evidence that as the tenure of CEOs or boards of directors lengthens, bank-specific bad time experiences are more likely to be integrated into the memories of CEOs or boards of directors, who are then motivated to adopt more conservative accounting policies to preempt future risks and failures. In addition, we find weak evidence that auditors may consider bank-specific bad times from prior years (i.e., low capitalization) by mandating more conservative policies to audit subsequent years' financial statements and issue auditor opinions. Thus the above empirical evidence points to the dominance of bad-time memories of inside stakeholders (i.e., CEOs and boards of directors) as leading to accounting conservatism in banks.

6. Additional Analyses

We examine the moderating effect of bank risk-taking activities on the relationship between bad time memory and accounting conservatism. In response to bad time memory, banks

may constrain their risk taking and reinforce their risk management activities, which further leads to an adjustment in accounting policies. Biddle et al. (2016) find that there is either a complement or a substitute relation between accounting conservatism and real corporate risk management activities in reducing the downside risk of cash flow for non-financial firms. Bouwman and Malmendier (2015) also show that past experiences of difficult times, proxied by undercapitalization, predict significantly more careful lending behavior and higher capitalization in the long run. On the one hand, when bank risks are high, the possibility of reporting bad news following bad times is significantly higher, implying a greater magnitude of loan loss allowance. On the other hand, high risks cause banks to intentionally hide potential bad news following crises, and we expect banks' accounting conservatism to be significantly lower. Thus, it becomes an empirical question to test the moderating effect of bank risk-taking activities on the relationship between bad times memory and accounting conservatism.

Following Laeven and Levine (2009) and Kanagaretnam et al. (2014), we use a Z-score as our proxy for bank risk-taking activities. Specially, $ZSCORE = -1 \times (ROA + CAPR)/\sigma(ROA)$, where ROA is the ratio of net income to total assets, $CAPR$ is the ratio of total capital to total assets, and $\sigma(ROA)$ is the standard deviation of ROA. Thus, *ZSCORE* measures the probability of a bank's insolvency. To test the moderating effect of bank risk-taking activities, we re-run the baseline LLA regression models by including $ZSCORE$ and interacting bad times proxies with $ZSCORE$.

$$LLA_t = \beta_0 + \beta_1 UNCAP_{t-1} + \beta_2 ZSCORE_t + \beta_3 UNCAP_{t-1} * ZSCORE_t + \beta_4 SIZE_{t-1} + \beta_5 LOAN_t + \beta_6 TIER1_t + \beta_7 EBTP_t + \beta_8 \Delta NPL_t + \beta_9 PUBLIC_t + \beta_{10} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (10)$$

$$LLA_t = \beta_0 + \beta_1 FNMR_{t-1} + \beta_2 ZSCORE_t + \beta_3 FNMR_{t-1} * ZSCORE_t + \beta_4 SIZE_{t-1} + \beta_5 LOAN_t + \beta_6 TIER1_t + \beta_7 EBTP_t + \beta_8 \Delta NPL_t + \beta_9 PUBLIC_t + \beta_{10} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (11)$$

$$LLA_t = \beta_0 + \beta_1 FATR_{t-1} + \beta_2 ZSCORE_t + \beta_3 FATR_{t-1} * ZSCORE_t + \beta_4 SIZE_{t-1} + \beta_5 LOAN_t + \beta_6 TIER1_t + \beta_7 EBTP_t + \beta_8 \Delta NPL_t + \beta_9 PUBLIC_t + \beta_{10} \Delta UEP_t + \sum State\_Indicators + \sum Year\_Indicators + \varepsilon_t \quad (12)$$

We present the test results in Table 7. We find that $ZSCORE_t$ is positively and significantly associated with LLA_t across all regressions, suggesting that banks allow for more expected loan losses when bank risk-taking activity is higher. More importantly, we find that the interaction terms $UNCAP_{t-1} * ZSCORE_t$, $FNMR_{t-1} * ZSCORE_t$, and $FATR_{t-1} * ZSCORE_t$ are positive and significant, supporting our prediction that following bad times, accounting conservatism increases more significantly for banks with more risk-taking activities. We find that even after controlling for additional moderating effects of bank risk-taking activities, bank-specific bad times and economic crises still have significant impacts on banks' accounting conservatism.

[Table 7]

In the final stage of analysis, we investigate whether the relationship between bad times and accounting conservatism holds for public and private banks. Prior literature shows that public banks and private banks have different earnings incentives and patterns. For example, Beatty et al. (2002) find that public banks have more incentives to report steadily increasing earnings, as shareholders of public banks are more likely than shareholders of private banks to rely on simple earnings-based heuristics in evaluating firm performance. Therefore, we estimate the regression for both types of banks. The regression results (untabulated) attest to a significantly positive relationship between bad times (bank-specific and macro-level) and accounting conservatism among both the public banks and the private banks subsamples, suggesting that past experiences influence bank accounting policies even if public and private banks have potentially different earnings incentives.

The baseline regressions estimate the influence of bad times on accounting conservatism for the entire 17 years (1997-2013). Now we repeat the analysis for each of the two sub-periods separately: pre-crisis (1997-2006) and post-crisis (2010-2013). The untabulated results indicate that our main inferences hold for both subsamples. Finally, we assess the robustness of our results by adding several state-level control variables. Following Beatty and Liao (2014), we include GDP growth rate and house price index of the state where the bank headquarters is located. The main results remain robust after we include these macro-level variables.

An alternative explanation is that past bad times draw regulatory interventions that demand more conservative reporting. Undercapitalized banks face enforcement actions, in which regulators often require the banks to build more allowances. For example, in the consent order issued to the United Commerce Bank Bloomington, Indiana, the FDIC required: "Within thirty (30) days from the date of this Order, the Bank shall provide a minimum of $1,350,000 to the ALLL and reflect this provision in the June 30, 2011 Report of Income and Condition" (http://www.fdic.gov/bank/individual/enforcement/2011-09-06.pdf). Wheeler (2019) finds that regulators also influence banks through informal actions such as a Memorandum of Understanding between a bank's board of directors and regulators. These formal and informal actions may create pressure on other local banks to recognize more allowances. Thus, in the absence of institutional memory, regulatory pressure may well explain the findings. Another alternative explanation is that bad times may persist or revert in the next period, creating an economic environment that promotes conservative reporting (e.g., "a big bath" after CEO turnover). In order to address examine whether two alternative explanations are correct, we create four subsamples based on four capital measures: the level of Tier 1 capital as a percentage of its total assets, the level of total capital as a percentage of risk-weighted assets, Tier 1 capital,

and total capital. In these subsamples, we drop the banks that have the lowest 10% values of the four capital measures. For example, in the first subsample, we drop the banks that have the lowest 10% value of the Tier 1 capital as a percentage of its total assets. We run the regression tests in all of the four subsamples. We find that our main results remain robust when we use these four subsamples. We conclude that these two alternative explanations do not explain our main results.

LLA is a function of the riskiness of the loan portfolio more generally, and Bouwman and Malmendier (2015) indicate that undercapitalized banks are generally riskier. Indeed, having high levels of risky assets increases risk-weighted assets and thus decreases the capital ratios that are used to identify banks experiencing "bad times." We also examine the relation between the loan loss provisions (LLPs) and the lagged, contemporaneous, and leading changes in nonperforming loans (NPLs). NPLs are relatively non-discretionary indicators of problematic assets, and more conservative banks should have LLPs that relate more strongly to the change in NPLs. Because LLP is a choice made this year, it is sensitive to recent experiences. In a robustness test, we use LLP to replace LLA and run the regression in equation (9). The unreported results of using LLP as the dependent variable is similar to the results of using LLA as the dependent variable. Our main findings remain robust to the robustness test.

Bouwman and Malmendier (2015) find that undercapitalization in the past portends significantly less risk-taking in future periods. However, they observe that "witnessing other banks in crisis does not induce such behavior. If anything, bankers who see other banks fail but their own bank survives build on this (relatively) good experience to take on more risk and hold less capital." In other words, Bouwman and Malmendier (2015) show that bank survival through times when other banks fail seems to operate as good times rather than bad times. A natural

question is whether bank risk (or loan portfolio risk for the LLA analysis) is a correlated omitted variable. It seems sensible to expect banks with higher risk (or higher loan portfolio risk) to have higher LLAs. We address the risk of the loan portfolio and asset base more generally by including the volatility of interest margin and the volatility of net earnings in the past three years as control variables in a sensitivity test. The unreported results show that our main findings are robust to the inclusion of two risk-taking controls.

7. Conclusions

Our primary research question is whether and how bad times contribute to bank accounting conservatism. We are interested in two types of bank experiences: 1) bank-specific bad times in which the bank itself is affected and undercapitalized, and 2) the experiences of the banks that weathered statewide and countywide bank failures. We answer the question by analyzing a sample of banks over the years 1997-2013, a period encompassing both pre- and post-crisis periods.

Our empirical results show that banks' experiences of being exposed to specific bad times such as undercapitalization are associated with greater financial reporting conservatism as reflected in two accounting measures: asymmetric timeliness of recognition of earnings decreases versus earnings increases, and the ratio of loan loss allowance to total loans. In addition, we find that the experiences of witnessing failures of other banks in macro-level economic crisis also increase banks' financial reporting conservatism. These findings hold across both public and private banks that have different earnings incentives, and in both the pre-crisis and post-crisis periods.

We offer the following explanations. When a bank has experienced crisis or threat of failure, it may reflect on its bad times and become more pessimistic about its future, thus recognizing potential losses in a timelier manner. In addition, loss recognition offers a cushion against potential crisis and failure (Laeven and Majnoni 2003). Thus, a bank that had bad experiences should become more cautious and recognize more allowances to buffer against potential crisis and failure. These findings contrast with Bouwman and Malmendier (2015), whose empirical results suggest that a bank which weathered a crisis exaggerates its ability to withstand another crisis and becomes less concerned about future profitability and capital inadequacy issues.

Our channel analysis reports that bad time memory affects bank accounting conservatism through the long tenure of CEOs and boards of directors. CEOs and boards of directors with longer tenure gain unique knowledge about the banks' operations and are more likely to share the memory of bad times with the banks. CEOs and boards of directors demand more conservative accounting policies that act as a buffer against future losses and crises, thereby reducing their litigation and reputation risks. Furthermore, we survey 806 senior U.S. bank executives whose replies are consistent with our empirical results. Our findings indicate that banks' accounting conservatism is heightened by the experience of bad times through the memory of CEOs and boards of directors. Besides, we find that bank risk-taking has a positive moderating impact on the relationship between bad times' memory and accounting conservatism. Overall, our findings indicate that banks' accounting conservatism improves with their exposure to bad times.

We provide original evidence that banks adopt conservative accounting policies after experiencing bank-specific and economic-wide bad times. Our evidence extends prior studies

(e.g., Black and Gallemore 2013; Kanagaretnam et al. 2014; Leventis et al. 2013) by showing that bad time history is another determinant of bank accounting conservatism. In addition, our findings add novel evidence to support the organizational learning theory. Our results indicate that banks could learn by reflecting on their own mistakes and those of others. In addition, our evidence implies that accounting policies act as a form of routine to capture the experiential lessons in banks.

Bouwman and Malmendier (2015) find that banks take less risk after its undercapitalization but more risk after witnessing other banks' failure. In contrast, we that these two types of events exert the same effect on accounting conservatism. Bouwman and Malmendier (2015) find that it takes about 4-6 years for a bank to learn from past undercapitalization and to become more prudential in regulatory capital and lending. However, our paper shows that one year is sufficient to alter accounting decisions. The impact of history on accounting conservatism is faster than the impact on capital lending because accounting policy can be changed immediately but the level of capitalization takes a long time to be improved.

Our findings have important implications for bank managers, investors, and bank regulators. The timely recognition of earnings declines and loan losses is crucial to the banking sector because the timely recognition of earnings decreases and delayed recognition of earnings increases will directly impact the ratios of profitability and equity capital, which could determine the monitoring intensity of bank regulators (Kanagaretnam et al. 2014). In this sense, bank regulators and investors should be extremely vigilant in monitoring financial reporting of banks that have rarely been exposed to any form of bad times such as undercapitalization or macro-level banking crisis, as these banks' accounting policies may be aggressive and their financial reports may contain potential risks.

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Appendix A
Variable Definitions

Variables	Definitions
ΔROA	Change in net income scaled by lagged total assets.
$D\Delta ROA$	A dummy variable that equals 1 if the change in net income is negative, and 0 otherwise.
LLA	Loan loss allowance scaled by total loans.
$UNCAP$	A dummy variable that equals 1 if the Tier 1 risk-based capital ratio is less than 4% or the total risk-based capital ratio is less than 8% (after 1990), and 0 otherwise. In path analysis where there is no variation among the sample for the dummy variable due to reduced number of observations, we use the negative of the Tier 1 risk-based capital ratio, so that high value of $UNCAP$ represents bank-specific bad times (low capitalization).
$FNMR$	The number of statewide (countywide) bank failures scaled by the number of all banks in the state (county).
$FATR$	The total assets of statewide (countywide) failed banks scaled by the total assets of all banks in the state (county).
$SIZE$	Natural log of total assets.
$LOAN$	Total loans scaled by total assets.
$TIER1$	Tier 1 risk-based capital ratio calculated by tier 1 capital scaled by total risk-weighted assets. Risk-weighted assets are constructed by assigning different weights to assets with different levels of risk and summing the totals. The tier-1 risk-based-capital ratio measures how much buffer a bank has as a percentage of its riskiness.
$EBTP$	Earnings before loan loss provisions and taxes scaled by lagged total assets.
ΔNPL	Change in nonperforming loans scaled by total loans.
$PUBLIC$	A dummy variable that equals 1 for a public bank, and 0 otherwise.
$POST$	A dummy variable that equals 1 after an undercapitalization occurs, and 0 otherwise.
CO	Loan charge-offs scaled by total loans.
ΔUEP	Change in unemployment rate of the state where the bank's headquarter is located over the year.
$ZSCORE$	$-1 \times (ROA + CAPR)/\sigma(ROA)$, where ROA is the ratio of net income to total assets, $CAPR$ is the ratio of total capital to total assets, and $\sigma(ROA)$ is the standard deviation of ROA.
CEOTEN	CEO tenure, calculated as the difference between the current fiscal year end and the date at which the CEO took office, measured in years.
BODTEN	Board of directors' tenure, calculated as the average number of years that board directors have served on the board.
AUDTEN	Auditor's tenure, calculated as the length of the audit firm-client relationship, measured in years.

Appendix B
Survey Questionnaire to Senior U.S. Bank Executives

Dear Senior Bank Executives:

We invite you to complete a brief two-question survey that will take about 10 minutes. As part of a research project, we are carrying out a study to learn the impact of banks' organizational memory of past history on the conservatism of accounting policy. We selected your name from your bank's website. If you would like to participate, please reply this email to us by July 30, 2020. Your personal information will be kept confidential. Please see the attached Letter of Information for details about participating in the study. Participation is voluntary. This research has been reviewed and approved by the university research ethics board.

Our research group has examined the impact of banks' organizational memory of past history on the conservatism of accounting policy. We examined two types of historical problems (bad times): 1) banks' undercapitalization and 2) the failures of banks during financial crises. Using U.S. banks during 1997-2013, we have found that both types of historical problems are positively related to timelier recognition of earnings decreases versus earnings increases in accounting income. We also found that following such undesirable events, banks increase their allowance for loan losses. Our results suggested that banks' organizational memory of adverse events and macro-level banking crises leads to greater accounting conservatism in banks. These findings are consistent with the argument that after experiencing bank-specific and economy-wide adversity, banks become more pessimistic about their future earnings performance and thus adopt more conservative accounting policies. We defined a bank's undercapitalization as a problem if the Tier 1 risk-based capital ratio is less than 4% or the total risk-based capital ratio is less than 8%. Our first accounting conservatism measure is the tendency to recognize bad news in earnings more quickly than recognizing good news in earnings. Our second accounting conservatism measure is the ratio of loan loss allowances scaled by total loans.

We are curious about the logical link from organizational memory to accounting conservatism, and want to open the black box about how banks react to historical problems by changing their accounting policies. In the face of bank-level or macro-level crises, how do bank managers and/or boards of directors take actions to change bank accounting policy? Is the change of accounting policy driven by managers' incentives, by board monitoring, or by external auditors? We want to differentiate between the effect of the negative experiences of bank managers, board of directors, and auditors, and identify which force plays the major role in changing a bank's accounting policy.

We would like to ask you two survey questions which are listed below.

(1) Is the heightened accounting conservatism policy mainly driven and motivated by bank managers' incentives, board of directors' inside monitoring, or auditors' external monitoring? Please select your choice(s) below. Please check all that may apply.

[ ] by bank managers' incentives (i.e., CEO, CFO)
[ ] by board of directors' inside monitoring
[ ] by auditors' external monitoring
[ ] by bank managers' incentives and board of directors' inside monitoring
[ ] by bank managers' incentives and auditors' external monitoring
[ ] by board of directors' inside monitoring and auditors' external monitoring
[ ] by bank managers' incentives and board of directors' inside monitoring and auditors' external monitoring
[ ] by other external stakeholders, such as bank's suppliers or creditors
[ ] none of the above

(2) Would you please illustrate the mechanism by which bad time memory of the bank's managers (board of directors and/or auditors) leads to higher accounting conservatism?
Response:

Thank you in advance for taking time out of your busy schedule to support our academic research. If you kindly send your answers to our email as soon as possible, we will greatly appreciate your assistance.

Appendix C
Responses of Senior U.S. Bank Executives to the Second Survey Question

The second survey question:

Would you please illustrate the mechanism by which bad time memory of the bank's managers (board of directors and/or auditors) leads to higher accounting conservatism?

Responses of senior U.S. bank executives:

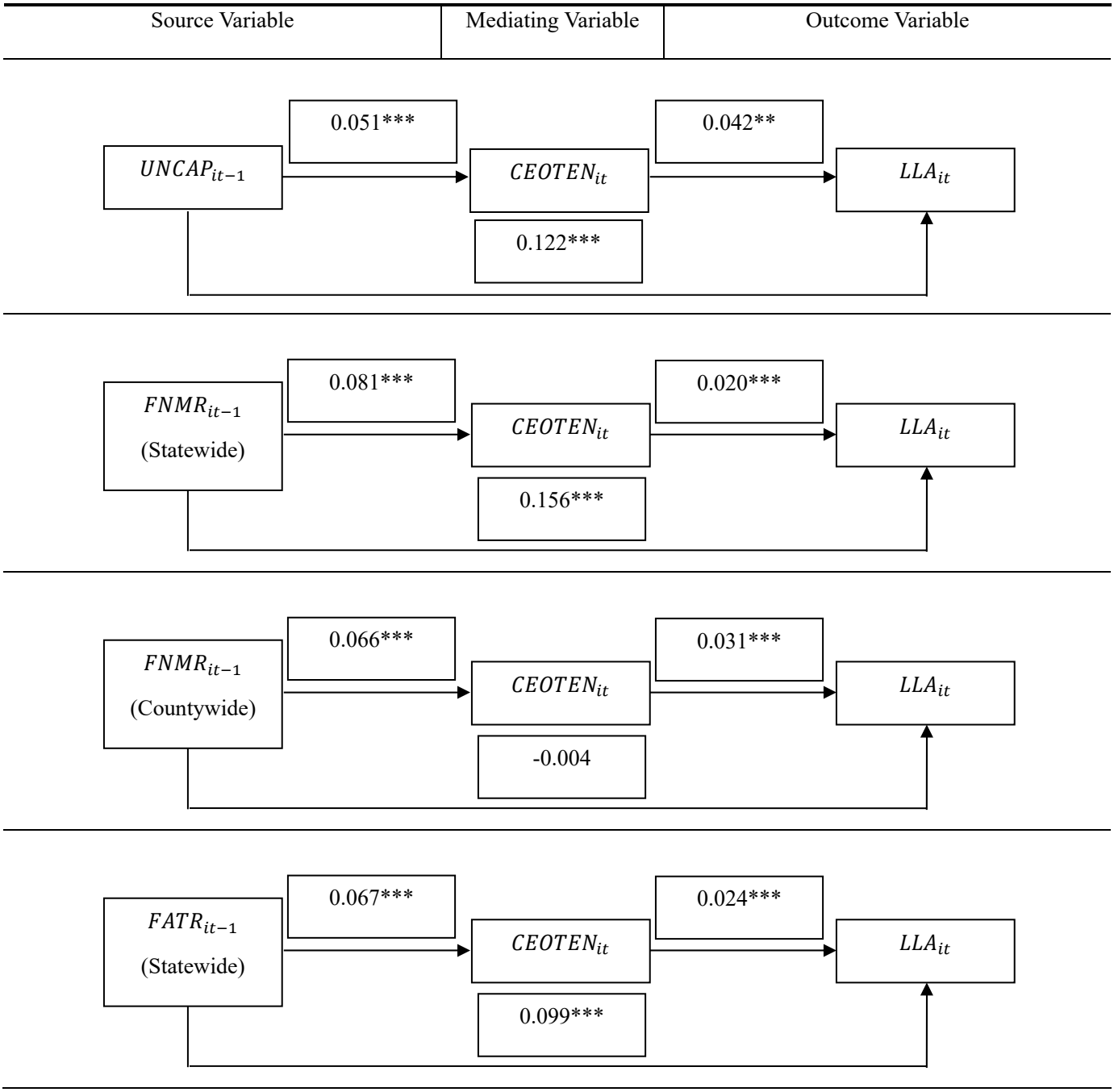
1) The conservative policy is mostly driven and motivated by our bank management and directors. However it is often derived from prior experience with, in our opinion, overzealous regulators from the past. Typically in a downturn or "bad time," regulators come in and invoke pressure to mitigate risk, if management has not already done so. In our bank that collaboration between the board and management typically would preclude this, but in the past there has been times when after a regulatory visit, post "bad time," we were "guided" to increase reserve levels, this was particularly true during the more recent energy bust. This was done through an interpretation of our reserve for loan and lease losses by a regulator. They would recommend changes to a calculation that had passed the test of several prior exam cycles.
2) I provide examples of the impact of our "bad memory" on our accounting conservatism. 1) We have kept our loss reserves higher at this point in the economic cycle than we had in the previous cycle. For example, while our delinquencies are still very low, we have bolstered our reserves dramatically based on proactive adjustments to forward looking qualitative factors. We are in a better position today than we were in 2007. 2) Our equity requirements for credit facilities are elevated today. 3) While under no regulatory requirement, we have proactively suspended repurchases of our shares to ensure we have additional capital to survive a downturn. It is important to note that we are not a publicly traded entity so for most of our shareholders, their only source of liquidity for their shares is us.
3) The negative repercussions of economic downturns place an indelible imprint on bank boards and management. Those negative repercussions include: (1) Cease and Desist Orders from regulatory agencies; (2) Earnings pressure from increased ALLL provisions and capital requirements; (3) Reduction of salary and benefits for bank management and employees; (4) tragic loss of businesses and homes by bank customers; and (5) detrimental reputational impact for the bank and its management team. Once experienced, these repercussions are not something that bank boards and management want to repeat, ever. Important to note is the amount of learning that takes place for management teams during these stressed time periods. The learning includes: (1) understanding people; (2) understanding regulatory requirements and processes; (3) understanding the full fiduciary responsibility (and liability) of executive management and Directors; (4) understanding the power of bank regulators; and (5) understanding the impact of bank accounting actions on earnings, capital, reserves and dividends. So the mechanism by which bad time memory of the bank's management team and Board leads to higher accounting conservatism is a combination of both the desire to not repeat the negative repercussions listed above AND the learning that has taken place during stressed periods. It is experience, pure and simple. It cannot be replicated in a classroom or seminar environment; it is a lived experience that creates tremendous value in those who have done it.
4) Accounting policy doesn't change as a result of a bank's economic outlook. Policy is driven by regulators and AICPA accounting boards. The decisions related to conservatism are credit driven. As management's view of the local and national economy change, two types of actions are taken; 1) credit standards (acceptable DSCR, credit scores, collateral LTV, etc. change and, 2) qualitative factors in the ALLL calculation change. The analysis of the latter is done at least quarterly, regardless of economic activity. The former is more ad hoc and is usually driven by management's desire to protect assets and income on the downside and by the board of directors on the upside.
5) Whistle blower Policy, Timely completion of outstanding audit items, Audit and ERM Committee meetings.
6) Our bank is a mutual savings bank and, while performance incentives are part of annual goals, the Bank is managed with a long term perspective rather than maximizing quarterly performance. Internal management monitoring is not listed but I feel is an equally important factor to ensure an adequate control environment. An independent credit function, ALCO, and finance department reporting to the board (or board committees) ensures that multiple voices/perspectives are heard. The current credit environment is a perfect example of actions taken as a result of "bad time memory." Our bank has not adopted CECL yet and, as a result, its ALLL process follows the historical incurred loss model. The recent FASB pronouncement on the treatment of COVID 19 modifications has postponed/delayed recognition of non-accrual loans. The likely long term economic recovery from the pandemic would imply that a percentage of the modified loans will end up in non-accrual status. As a result, the Bank would

be under reserved for problem loans that will likely be recognized after the 6-month deferral period ends. The Board's collective memory of the economic impact of economic downturns on loan portfolio performance has led to a more aggressive reserve calculation well in advance of any loss being incurred. This was accomplished in the ALLL calculation via higher managerial factors, incremental reserve for a COVID 19 modification, and incremental risk (loan rating) based attributions. While this may not result in being fully reserved as the impact of COVID is felt, the incremental build-up in reserves is done with resolve garnered during past cyclical economic downturns.

7) As a regional bank headquartered in Oklahoma, we are not only facing the economic downturn resulting from the pandemic, but also the impact of low energy prices beginning in the first quarter of 2020. Oklahoma is a commodity based state, primarily driven by changes in oil and natural gas prices. Therefore, the volatility of those commodities tends to drive our loan losses. In addition, the accounting change from an incurred loss model to an expected loss model (aka CECL) also created additional allowance build as it required us to be forward looking as long as it is "reasonable and supportable." Our bank has historically strong asset quality (it is one of our core values) which has resulted in extremely low charge off rates as compared to our peers. So, our conservatism really begins on the frontend as part of our underwriting, which has resulted in the aforementioned lower charge offs. To explain our conservatism, you will need to understand the experience of our senior management team, going back to the oil crisis of the early to mid-1980s. The banking industry experienced significant loss during that decade, which continues to impact management's outlook for future losses. In fact, some of our modeling incorporates losses going back to that time period. We also have significant insider ownership (over 50%), which allows us to plan long-term as opposed to short-term decision making. We believe our long-term planning provides greater value to all of our shareholders. So, in summary, our conservative accounting policy stems from our experience from the oil crisis of the 1980s, long-term planning, and providing for expected losses under CECL. Our focus on asset quality has resulted in conservative underwriting which has provided high asset quality and low charge offs.
8) FDIC exam appetite for "hot" topics drives director and audit attitudes.
9) The behavior of banks in the U.S. may differ slightly from what you see at the D-SIBs, domestic banks and credit unions in Canada. I have spent time in Toronto with leadership at the D-SIBs, the Bank of Canada, and the CDIC in my former capacity running an initiative for the U.S. financial sector. The U.S. banking industry, while cognizant of and responsive to capital markets expectations, very much anticipates and reacts—maybe even overreacts—to real or perceived expectations of federal supervisory agencies. We are also an industry full of risk mitigates and now, following the financial crisis from a decade ago, risk averse stewards of "institutions." There are always exceptions to the rule, of course.
10) The bank board is pleased with the bank's results. The federal audits make compliance a challenge. We have to hire additional staff and/or take management's focus to just maintain federal banking compliance. The compliance adds cost which is ultimately passed to the customer in the form of fees and/or higher rates. We lend less to people of need in fear of being scrutinized. Dodd-Frank has actually been an impediment for the underserved and creates less, not more, access to capital.
11) The banking industry regulatory body (ours is the OCC) and external auditors react to economic downturns and require a more conservative loan loss reserve.[14]
12) In our region, most bank directors are in their 60s and 70s. This means that they were in business during the 80s when several banks failed. Because of this, there is a lot of hesitation in banks running hotter (loan to deposit ratios and other capital ratios). The new bank where is work now, the main focus is just on profitability because the bank is still considered to be very small. Our bank board is very sensitive to ensuring we do not do anything that will not be pleasing to the examiners. They are looking at things very closely to ensure that we are able to get our change controls approved without any issues. Our bank also has a good working relationship with our OCC branch so we want to ensure we maintain it.
13) This generally gets initiated in our forecasting and general economic outlook discussions. Those discussions drive the assumptions we make when we forecast financial performance (quarterly) and develop strategic plans (usually three-year plans) or when we are developing budgets for the upcoming fiscal year.

[14] The Office of the Comptroller of the Currency (OCC) is an independent bureau within the United States Department of the Treasury and serves to charter, regulate, and supervise all national banks and thrift institutions in the United States.

Figure 1 Path Analysis of Bad Times and Accounting Conservatism through CEO Tenure



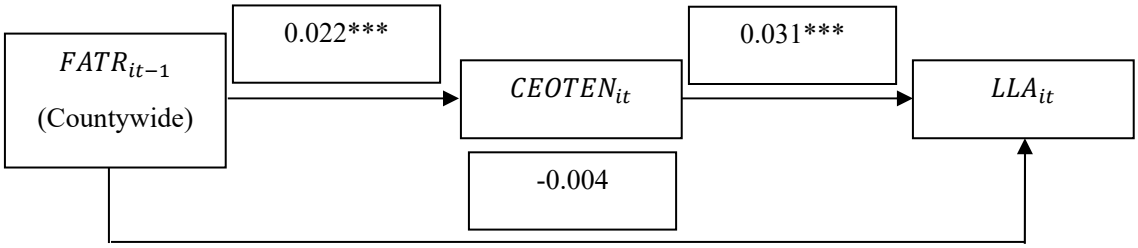
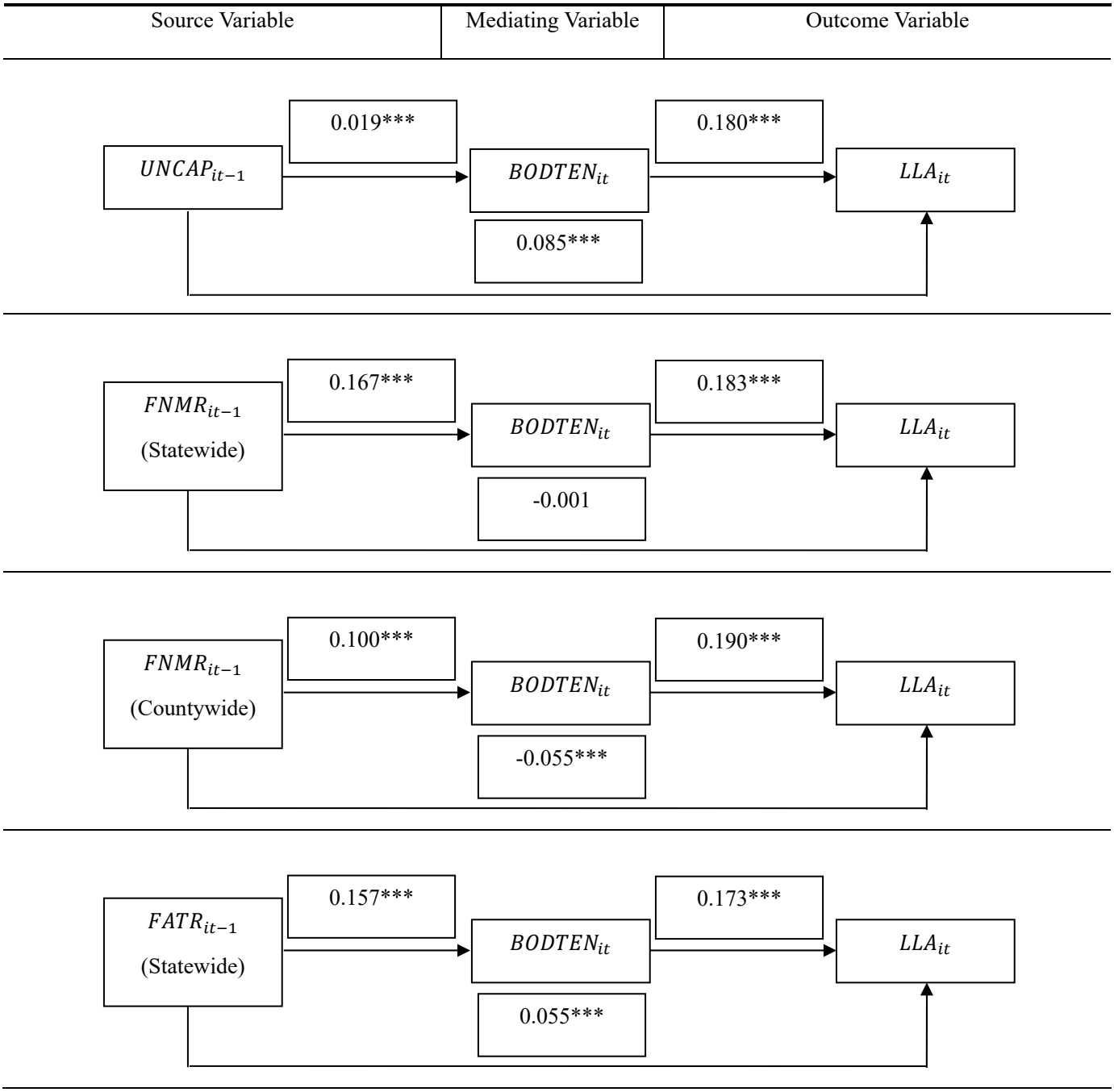


Figure 1 provides the path analysis of the relationship between bad times and accounting conservatism: the direct effect between the two variables, and the indirect effect through CEO tenure (CEOTEN). *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Definitions of the variables are provided in Appendix A.

Figure 2 Path Analysis of Bad Times and Accounting Conservatism through Board of Directors' Tenure



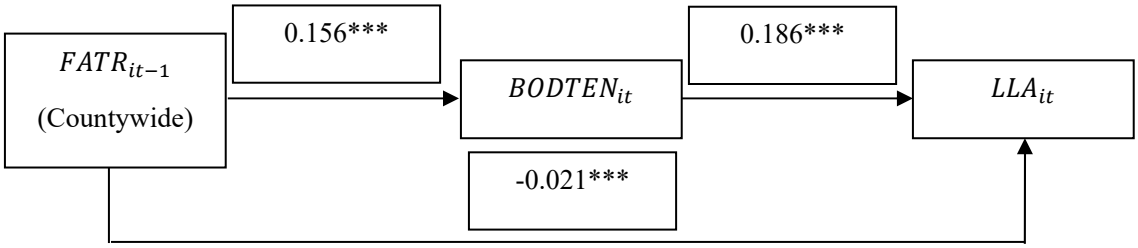
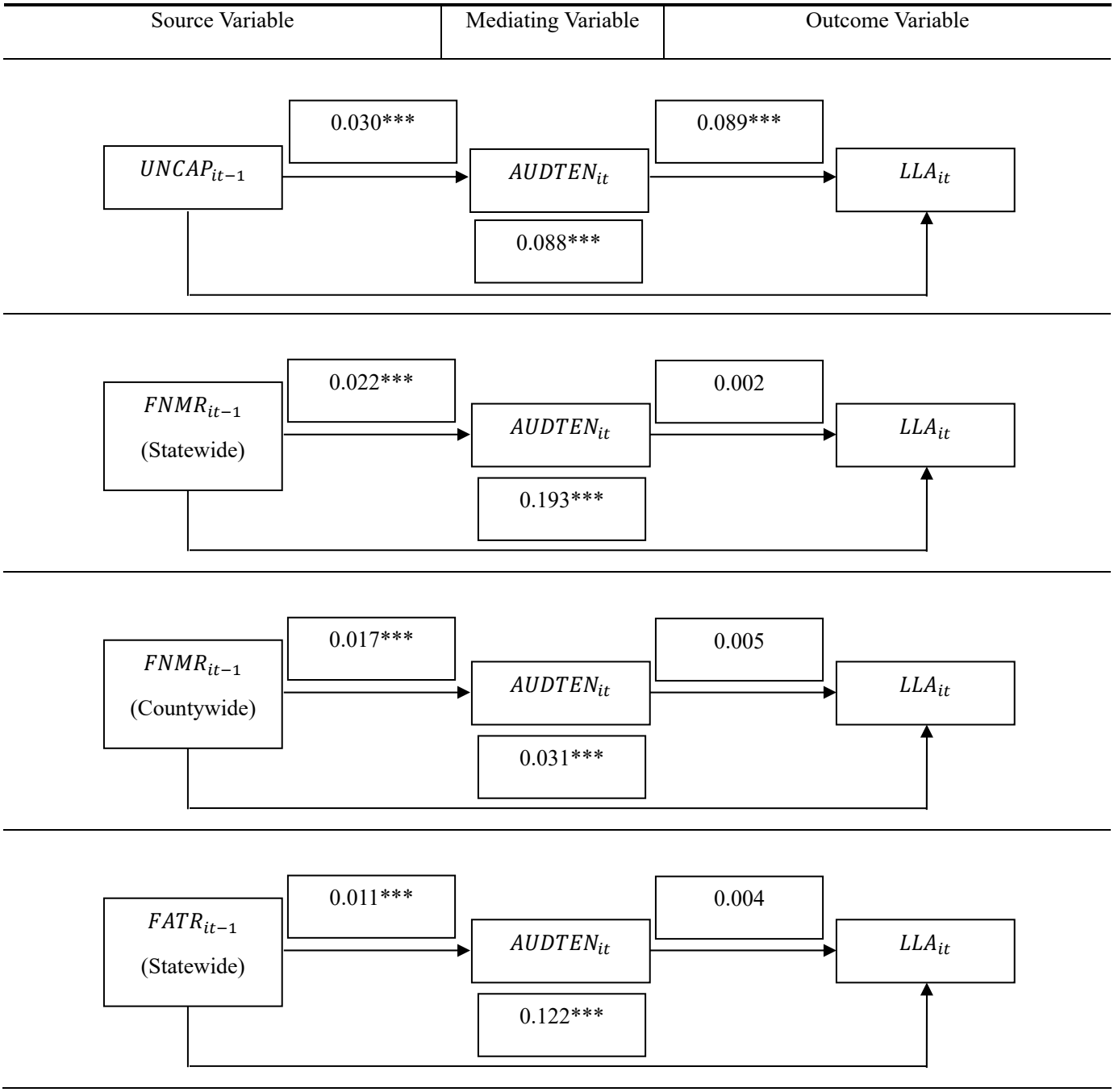


Figure 2 provides the path analysis of the relationship between bad times and accounting conservatism: the direct effect between the two variables, and the indirect effect through board of directors' tenure (BODTEN). *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Definitions of the variables are provided in Appendix A.

Figure 3 Path Analysis of Bad Times and Accounting Conservatism through Auditor's Tenure



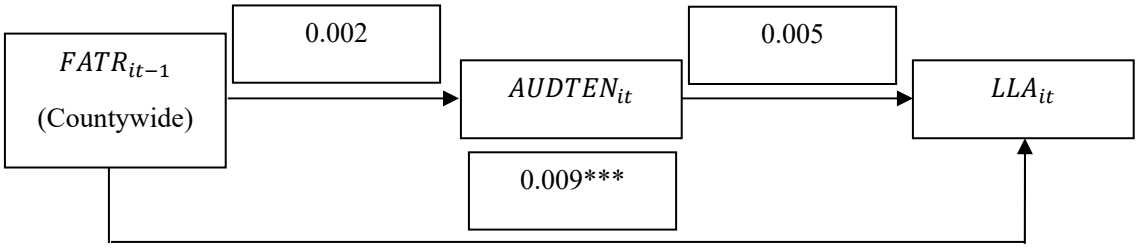


Figure 3 provides the path analysis of the relationship between bad times and accounting conservatism: the direct effect between the two variables, and the indirect effect through auditor's tenure (AUDTEN). *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Definitions of the variables are provided in Appendix A.

Table 1 Descriptive Statistics

Panel A: Variables Used in Earnings Changes Regressions

Variable	N	Mean	Median	Q1	Q3	Std. Dev.
ΔROA_t	128,381	-0.0001	-0.00003	-0.001	0.001	0.004
$D\Delta ROA_{t-1}$	128,381	0.506	1.000	0.000	1.000	0.500
ΔROA_{t-1}	128,381	-0.0001	-0.00002	-0.001	0.001	0.004
$UNCAP_{t-1}$	128,381	0.002	0.000	0.000	0.000	0.043
$FNMR_{t-1}$ (Statewide)	128,381	0.003	0.000	0.000	0.001	0.012
$FNMR_{t-1}$ (Countywide)	128,381	0.003	0.000	0.000	0.000	0.030
$FATR_{t-1}$ (Statewide)	128,381	0.003	0.000	0.000	0.000	0.014
$FATR_{t-1}$ (Countywide)	128,381	0.004	0.000	0.000	0.000	0.110
$SIZE_{t-1}$	128,381	11.708	11.575	10.841	12.400	1.275
$LOAN_t$	128,381	0.626	0.645	0.535	0.737	0.152
$TIER1_t$	128,381	0.160	0.137	0.111	0.181	0.076
$EBTP_t$	128,381	0.004	0.004	0.002	0.005	0.003
ΔNPL	128,381	0.001	0.000	-0.004	0.004	0.014
$PUBLIC_t$	128,381	0.028	0.000	0.000	0.000	0.164
ΔUEP_t	128,381	0.001	-0.001	-0.005	0.005	0.010

Panel B: Variables Used in Loan Loss Allowance Regressions

Variable	N	Mean	Median	Q1	Q3	Std. Dev.
LLA_t	130,853	0.015	0.013	0.010	0.017	0.008
$UNCAP_{t-1}$	130,853	0.002	0.000	0.000	0.000	0.044
$FNMR_{t-1}$ (Statewide)	130,853	0.004	0.000	0.000	0.001	0.012
$FNMR_{t-1}$ (Countywide)	130,853	0.003	0.000	0.000	0.000	0.030
$FATR_{t-1}$ (Statewide)	130,853	0.003	0.000	0.000	0.000	0.014
$FATR_{t-1}$ (Countywide)	130,853	0.005	0.000	0.000	0.000	0.114
$SIZE_{t-1}$	130,853	11.699	11.564	10.835	12.389	1.273
$LOAN_t$	130,853	0.628	0.646	0.537	0.739	0.152
$TIER1_t$	130,853	0.160	0.137	0.111	0.181	0.076
$EBTP_t$	130,853	0.004	0.004	0.002	0.005	0.004
ΔNPL	130,853	0.001	0.000	-0.004	0.004	0.015
$PUBLIC_t$	130,853	0.028	0.000	0.000	0.000	0.164
ΔUEP_t	130,853	0.001	-0.001	-0.005	0.005	0.010

Table 1 provides the descriptive statistics, with Panel A for variables in Equations (1), (2), and (3), and Panel B for variables in Equations (4), (5), and (6). Continuous variables are winsorized at top and bottom 1%. Definitions of the variables are provided in Appendix A.

Table 2 Pearson Correlation Matrix

Panel A: Variables Used in Changes Regressions

	Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	ΔROA_t	**0.14**	**-0.33**	**0.10**	**0.09**	**0.03**	**0.06**	**0.02**	**-0.04**	**-0.02**	**0.03**	**0.31**	**-0.19**	**-0.01**	**-0.09**
2	$D\Delta ROA_{t-1}$		**-0.51**	0.00	**-0.01**	**-0.01**	**0.02**	0.00	**0.01**	**-0.01**	0.00	**-0.07**	**0.04**	0.00	**0.10**
3	ΔROA_{t-1}			**-0.01**	**0.02**	**0.01**	**-0.03**	0.00	**-0.02**	**-0.01**	**0.03**	**0.09**	**-0.09**	-0.01	**-0.15**
4	$UNCAP_{t-1}$				**0.12**	**0.06**	**0.07**	**0.04**	**0.01**	**0.01**	**-0.01**	**-0.05**	**-0.07**	0.00	**-0.02**
5	$FNMR_{t-1}$ (Statewide)					**0.30**	**0.66**	**0.14**	**0.09**	0.00	0.00	**-0.12**	**-0.03**	**0.01**	**-0.09**
6	$FNMR_{t-1}$ (Countywide)						**0.21**	**0.56**	**0.04**	**0.01**	**-0.01**	**-0.04**	**-0.02**	0.00	**-0.03**
7	$FATR_{t-1}$ (Statewide)							**0.17**	**0.07**	0.00	0.00	**-0.10**	**0.03**	0.00	**0.04**
8	$FATR_{t-1}$ (Countywide)								0.00	0.00	0.00	**-0.02**	0.00	0.00	**0.01**
9	$SIZE_{t-1}$									**0.18**	**-0.26**	**0.17**	**0.04**	**0.26**	**0.03**
10	$LOAN_t$										**-0.58**	**0.16**	**0.08**	**0.06**	**0.07**
11	$TIER1_t$											**-0.05**	**-0.07**	**-0.08**	**-0.06**
12	$EBTP_t$												**-0.08**	**0.02**	**-0.09**
13	ΔNPL_t													**0.01**	**0.21**
14	$PUBLIC_t$														**0.02**
15	ΔUEP_t														

Panel B: Variables Used in Loan Loss Allowance Earnings Regressions

	Variable	2	3	4	5	6	7	8	9	10	11	12	13
1	LLA_t	**0.05**	**0.19**	**0.07**	**0.17**	**0.04**	**0.01**	**-0.15**	**0.11**	**-0.10**	**0.11**	0.00	**0.04**
2	$UNCAP_{t-1}$		**0.12**	**0.06**	**0.08**	**0.04**	**0.01**	**0.01**	**-0.01**	**-0.04**	**-0.07**	0.00	**-0.02**
3	$FNMR_{t-1}$ (Statewide)			**0.30**	**0.66**	**0.14**	**0.09**	0.00	0.00	**-0.12**	**-0.03**	**0.01**	**-0.09**
4	$FNMR_{t-1}$ (Countywide)				**0.21**	**0.57**	**0.03**	**0.01**	**-0.01**	**-0.04**	**-0.02**	0.00	**-0.03**
5	$FATR_{t-1}$ (Statewide)					**0.17**	**0.06**	0.00	0.00	**-0.10**	**0.03**	0.00	**0.05**
6	$FATR_{t-1}$ (Countywide)						0.00	0.00	0.00	**-0.02**	0.00	0.00	**0.01**
7	$SIZE_{t-1}$							**0.17**	**-0.25**	**0.17**	**0.04**	**0.26**	**0.03**
8	$LOAN_t$								**-0.58**	**0.15**	**0.08**	**0.06**	**0.07**
9	$TIER1_t$									**-0.05**	**-0.07**	**-0.08**	**-0.06**
10	$EBTP_t$										**-0.09**	**0.02**	**-0.10**
11	ΔNPL_t											**0.01**	**0.22**
12	$PUBLIC_t$												**0.01**
13	ΔUEP_t												

Table 2 provides the Pearson correlation Matrix, with Panel A for variables in Equations (1), (2), and (3), and Panel B for variables in Equations (4), (5), and (6). Continuous variables are winsorized at top and bottom 1%. Bold numbers are significant at the 5% level, based on a two-tailed test. Definitions of the variables are provided in Appendix A.

Table 3 Univariate Tests

	$UNCAP_{t-1}$	$FNMR_{t-1}$ (Statewide)	$FNMR_{t-1}$ (Countywide)	$FATR_{t-1}$ (Statewide)	$FATR_{t-1}$ (Countywide)
Mean LLA_{it} of the banks in Above Median Value of Bad Time Proxies	0.025	0.017	0.022	0.017	0.022
Mean LLA_{it} of the banks in Below Median Value of Bad Time Proxies	0.015	0.015	0.015	0.015	0.015
Difference in Mean LLA_{it} of the banks between Above and Below Median Value of Bad Time Proxies	0.010	0.002	0.007	0.002	0.007
Test of the Difference (t-Statistic)	18.12***	48.58***	44.89***	48.57***	44.89***

Table 3 compares the differences in the mean values of LLA_{it} of the banks between banks with high bad time proxies and those with low bad time proxies. Continuous variables are winsorized at top and bottom 1%. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Standard errors are clustered at the bank level. Definitions of the variables are provided in Appendix A.

Table 4 Bank-Specific Bad Time Proxy and Accounting Conservatism

	Dependent Variable = ΔROA_t (1)		Dependent Variable = LLA_t (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.004	12.96***	0.017	15.40***
$D\Delta ROA_{t-1}$	0.001	4.70***		
ΔROA_{t-1}	0.234	2.80***		
$UNCAP_{t-1}$	0.005	3.56***	0.009	8.32***
$D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	-1.125	-7.43***		
$D\Delta ROA_{t-1} * UNCAP_{t-1}$	0.001	0.45		
$\Delta ROA_{t-1} * UNCAP_{t-1}$	0.267	2.50**		
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1}$	-0.288	-2.01**		
$SIZE_{t-1}$	-0.0004	-19.33***	0.0003	4.51***
$SIZE_{t-1} * D\Delta ROA_{t-1}$	-0.0001	-5.32***		
$SIZE_{t-1} * \Delta ROA_{t-1}$	-0.032	-4.54 ***		
$SIZE_{t-1} * D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	0.049	3.87***		
$LOAN_t$	-0.002	-17.20***	-0.007	-12.56***
$TIER1_t$	-0.002	-5.95***	0.007	5.08***
$EBTP_t$	0.511	56.97***	-0.170	-7.74***
ΔNPL_t	-0.047	-28.63***	0.067	27.30***
$PUBLIC_t$	0.0003	4.13***	0.0001	0.91
ΔUEP_t	-0.029	-9.81***	0.029	5.95***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	128,381		130,853	
Adj. R^2	0.359		0.141	

Table 4 provides the OLS regression results of bank-specific bad time proxy and accounting conservatism. Continuous variables are winsorized at top and bottom 1%. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Standard errors are clustered at the bank level. Definitions of the variables are provided in Appendix A.

Table 5 Macro-Level Bad Time Proxy and Accounting Conservatism

Panel A: Earnings Changes and Number of Statewide (Countywide) Bank Failures

	Dependent Variable = ΔROA_t Statewide (1)		Dependent Variable = ΔROA_t Countywide (1)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.004	12.70***	0.004	13.02***
$D\Delta ROA_{t-1}$	0.001	5.02***	0.001	4.62***
ΔROA_{t-1}	0.299	3.70***	0.244	2.91***
$FNMR_{t-1}$	0.008	3.45***	0.002	2.12**
$D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	-1.195	-7.98***	-1.152	-7.61***
$D\Delta ROA_{t-1} * FNMR_{t-1}$	-0.010	-3.04***	-0.003	-1.69*
$\Delta ROA_{t-1} * FNMR_{t-1}$	3.431	9.07***	0.305	1.55
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FNMR_{t-1}$	-8.123	-13.42***	-1.111	-2.70***
$SIZE_{t-1}$	-0.0003	-18.97***	-0.0004	-19.30***
$SIZE_{t-1} * D\Delta ROA_{t-1}$	-0.0001	-5.53***	-0.0001	-5.17***
$SIZE_{t-1} * \Delta ROA_{t-1}$	-0.042	-6.03***	-0.032	-4.54***
$SIZE_{t-1} * D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	0.063	4.98***	0.051	3.99***
$LOAN_t$	-0.002	-16.65***	-0.002	-17.02***
$TIER1_t$	-0.002	-5.70***	-0.002	-5.99***
$EBTP_t$	0.513	57.97***	0.508	56.88***
ΔNPL_t	-0.047	-29.18***	-0.048	-29.40***
$PUBLIC_t$	0.0003	3.77***	0.0003	4.03***
ΔUEP_t	-0.028	-9.49***	-0.029	-9.94***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	128,381		128,381	
Adj. R^2	0.364		0.355	

Panel B: Earnings Changes and Assets of Statewide (Countywide) Failed Banks

	Dependent Variable = ΔROA_t Statewide (1)		Dependent Variable = ΔROA_t Countywide (1)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.004	13.09***	0.004	13.02***
$D\Delta ROA_{t-1}$	0.001	4.52***	0.001	4.70***
ΔROA_{t-1}	0.247	2.98***	0.240	2.86***
$FATR_{t-1}$	-0.004	-1.46	0.0003	1.29
$D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	-1.153	-7.67***	-1.142	-7.56***
$D\Delta ROA_{t-1} * FATR_{t-1}$	-0.003	-0.96	-0.001	-2.71***
$\Delta ROA_{t-1} * FATR_{t-1}$	3.375	8.28***	0.078	2.12**
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * FATR_{t-1}$	-5.725	-9.98***	-0.377	-4.59***
$SIZE_{t-1}$	-0.0004	-19.12***	-0.0004	-19.30***
$SIZE_{t-1} * D\Delta ROA_{t-1}$	-0.0001	-5.09***	-0.0001	-5.26***
$SIZE_{t-1} * \Delta ROA_{t-1}$	-0.036	-5.04***	-0.032	-4.45***
$SIZE_{t-1} * D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	0.056	4.39***	0.049	3.88***
$LOAN_t$	-0.002	-16.99***	-0.002	-17.04***
$TIER1_t$	-0.002	-5.94***	-0.002	-6.06***
$EBTP_t$	0.509	57.23***	0.507	56.71***
ΔNPL_t	-0.048	-29.63***	-0.048	-29.57***
$PUBLIC_t$	0.0003	3.78***	0.0003	4.05***

ΔUEP_t	-0.031	-10.51***	-0.030	-10.06***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	128,381		128,381	
Adj. R^2	0.359		0.355	

Panel C: Loan Loss Allowance and Number of Statewide (Countywide) Bank Failures

	Dependent Variable = LLA_t Statewide (1)		Dependent Variable = LLA_t Countywide (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.017	15.15***	0.017	15.38***
$FNMR_{t-1}$	0.073	17.41***	0.010	8.25***
$SIZE_{t-1}$	0.0003	4.43***	0.0003	4.49***
$LOAN_t$	-0.007	-12.48***	-0.007	-12.46***
$TIER1_t$	0.007	5.01***	0.007	5.07***
$EBTP_t$	-0.159	-7.24***	-0.173	-7.88***
ΔNPL_t	0.067	27.61***	0.065	26.98***
$PUBLIC_t$	0.0002	0.92	0.0002	0.91
ΔUEP_t	0.035	7.26***	0.028	5.92***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	130,853		130,853	
Adj. R^2	0.146		0.140	

Panel D: Loan Loss Allowance and Assets of Statewide (Countywide) Failed Banks

	Dependent Variable = LLA_t Statewide (1)		Dependent Variable = LLA_t Countywide (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.017	15.39***	0.017	15.36***
$FATR_{t-1}$	0.040	14.82***	0.001	3.56***
$SIZE_{t-1}$	0.0003	4.50***	0.0003	4.56***
$LOAN_t$	-0.007	-12.53***	-0.007	-12.44***
$TIER1_t$	0.007	4.99***	0.007	5.07***
$EBTP_t$	-0.169	-7.68***	-0.176	-7.97***
ΔNPL_t	0.065	26.73***	0.065	26.81***
$PUBLIC_t$	0.0002	0.88	0.0002	0.89
ΔUEP_t	0.024	5.01***	0.028	5.73***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	130,853		130,853	
Adj. R^2	0.142		0.139	

Table 5 provides the OLS regression results of macro-level bad time proxy and accounting conservatism. Continuous variables are winsorized at top and bottom 1%. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Standard errors are clustered at the bank level. Definitions of the variables are provided in Appendix A.

Table 6 Endogeneity Test for Bank-Specific Bad Time Proxy and Accounting Conservatism

Panel A: Undercapitalization Using Propensity Score Matching

	Dependent Variable = M_UNCAP_t (1)	
Variable	Coefficient	t-Statistic
Intercept	-10.252	184.65***
M_SIZE_{t-1}	0.150	7.93***
M_LOAN_t	5.935	88.69***
M_EBTP_t	-109.200	42.63***
M_NPL_t	37.595	152.27***
M_CO_t	136.900	59.78***
N	11,846	
Pseudo. R^2	0.275	

Panel B: Undercapitalization and Accounting Conservatism Using Difference in Difference

	Dependent Variable = ΔROA_t (1)		Dependent Variable = LLA_t (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.008	3.59***	0.036	8.87***
$D\Delta ROA_{t-1}$	0.001	0.78		
ΔROA_{t-1}	0.496	1.64		
$UNCAP_{t-1}$	-0.001	-2.41**	-0.001	-1.91*
$POST_{it}$	-0.002	-3.12***	-0.002	-2.40**
$D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	-1.612	-2.98***		
$D\Delta ROA_{t-1} * UNCAP_{t-1}$	-0.0004	-1.01		
$D\Delta ROA_{t-1} * POST_t$	0.001	0.85		
$\Delta ROA_{t-1} * UNCAP_{t-1}$	0.038	0.61		
$\Delta ROA_{t-1} * POST_t$	0.076	1.27		
$UNCAP_{t-1} * POST_t$	0.002	1.83*	0.011	9.49***
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1}$	0.068	0.56		
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * POST_t$	-0.111	-0.85		
$D\Delta ROA_{t-1} * UNCAP_{t-1} * POST_t$	-0.005	-3.20***		
$D\Delta ROA_{t-1} * \Delta ROA_{t-1} * UNCAP_{t-1} * POST_t$	-0.336	-2.37**		
$SIZE_{t-1}$	-0.0004	-3.62***	-0.0004	-1.51
$SIZE_{t-1} * D\Delta ROA_{t-1}$	-0.0001	-0.77		
$SIZE_{t-1} * \Delta ROA_{t-1}$	-0.051	-2.04**		
$SIZE_{t-1} * D\Delta ROA_{t-1} * \Delta ROA_{t-1}$	0.076	1.78*		
$LOAN_t$	-0.006	-4.66***	-0.013	-4.97***
$TIER1_t$	-0.001	-0.48	-0.015	-3.07***
$EBTP_t$	0.702	19.78***	-0.097	-1.49
ΔNPL_t	-0.059	-10.81***	0.091	13.72***
$PUBLIC_t$	0.0002	0.50	-0.002	-2.11**
ΔUEP_t	-0.036	-1.59	0.022	0.82
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	5,796		6,143	
Adj. R^2	0.438		0.461	

Table 6 provides the regression results of endogeneity test for bank-specific bad time proxy and accounting conservatism. Panel A presents the regression results using propensity score matching method, and Panel B presents the OLS regression

results using a sample that pools both the undercapitalized and matched banks. Continuous variables are winsorized at top and bottom 1%. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Standard errors are clustered at the bank level. Definitions of the variables are provided in Appendix A.

Table 7 The Moderating Effect of Bank Risk on Bad Time Proxy and Accounting Conservatism

Panel A: Loan Loss Allowance, Bank Undercapitalization, and Bank Risk

	Dependent Variable = LLA_t (1)	
Variable	Coefficient	t-Statistic
Intercept	0.017	15.17***
$UNCAP_{t-1}$	0.014	8.90***
$ZSCORE_t$	0.00002	4.53***
$UNCAP_{t-1}$*$ZSCORE_t$	0.0002	16.55***
$SIZE_{t-1}$	0.0003	5.73***
$LOAN_t$	-0.007	-12.77***
$TIER1_t$	0.012	8.16**
$EBTP_t$	-0.151	-6.80***
ΔNPL_t	0.065	26.91***
$PUBLIC_t$	0.0001	0.20
ΔUEP_t	0.027	5.73***
State Fixed Effects	Yes	
Year Fixed Effects	Yes	
N	129,864	
Adj. R^2	0.158	

Panel B: Loan Loss Allowance, Number of Statewide (Countywide) Bank Failures, and Bank Risk

	Dependent Variable = LLA_t Statewide (1)		Dependent Variable = LLA_t Countywide (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.017	14.95***	0.017	15.22***
$FNMR_{t-1}$	0.118	18.36***	0.0018	8.63***
$ZSCORE_t$	0.00001	14.20***	0.00002	16.45***
$FNMR_{t-1}$*$ZSCORE_t$	0.001	9.09***	0.0001	6.37***
$SIZE_{t-1}$	0.0003	5.46***	0.0003	5.66***
$LOAN_t$	-0.007	-12.71***	-0.007	-12.72***
$TIER1_t$	0.007	8.30***	0.012	8.10***
$EBTP_t$	-0.128	-5.76***	-0.154	-6.89***
ΔNPL_t	0.066	27.52***	0.064	26.86***
$PUBLIC_t$	0.0001	0.26	0.0001	0.21
ΔUEP_t	0.031	6.36***	0.027	5.54***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	129,864		129,864	
Adj. R^2	0.168		0.157	

Table 7 (Continued)

Panel C: Loan Loss Allowance, Assets of Statewide (Countywide) Failed Banks, and Bank Risk

	Dependent Variable = LLA_t Statewide (1)		Dependent Variable = LLA_t Countywide (2)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.017	15.16***	0.017	15.21***
$FATR_{t-1}$	0.077	16.55***	0.002	3.04***
$ZSCORE_t$	0.00001	15.24***	0.00002	16.66***
$FATR_{t-1}$*$ZSCORE_t$	0.001	9.93***	0.00002	1.75*
$SIZE_{t-1}$	0.0003	4.49***	0.0003	5.74***
$LOAN_t$	-0.007	-12.46***	-0.007	-12.72***
$TIER1_t$	0.007	5.07***	0.012	8.07***
$EBTP_t$	-0.173	-7.88***	-0.158	-7.05***
ΔNPL_t	0.065	26.98***	0.064	26.65***
$PUBLIC_t$	0.0002	0.91	0.00004	0.17
ΔUEP_t	0.028	5.92***	0.028	5.31***
State Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
N	129,864		129,864	
Adj. R^2	0.163		0.155	

Table 7 provides the OLS regression results of the moderating effects of bank risk-takings on bad time proxy and accounting conservatism. Continuous variables are winsorized at top and bottom 1%. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Standard errors are clustered at the bank level. Definitions of the variables are provided in Appendix.