Accounting Quality Benefits of Regulatory Spillover: Evidence from the Banking Industry

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree
Doctor of Philosophy in the Graduate School of The Ohio State University

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Graduate Program in Accounting and MIS
The Ohio State University
2019

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Abstract

I provide evidence that initiating PCAOB oversight of the broker-dealer industry improves the accounting quality at the affiliated commercial bank when the entities have shared bank holding company ownership. The spillover effect within an entity in this setting is interesting due to the significance of high-quality accounting in the banking industry, along with the conflict of interest debate regarding providing both commercial and investment banking services. Using loan-loss provision validity, earnings persistence, and cash-flow predictability as proxies for accounting quality, I find an improvement in accounting quality at commercial banks with broker-dealer affiliates after the PCAOB inspection initiation of broker-dealer audits. The auditor variation across entities in the sample and within the same entity provide cross-sectional variation to draw inferences regarding the mechanism by which the improvements to accounting quality occurs. I provide evidence that the mechanism for this change is an improvement in the audit process.

Acknowledgements

I am deeply indebted to my advisor, Anne Beatty, for her guidance and support on this dissertation and throughout my graduate studies. I am also grateful to my committee members, Darren Roulstone, Xue Wang, and Amy Sheneman who have provided invaluable feedback and advice.

I received helpful comments and suggestions from Zahn Bozanic, Rachel Geoffroy, Eric Holzman, Mike Iselin, Patrick Kielty, Zach Kowaleski, Charles Lee, Brian Mittendorf, Brian Monson, Allison Nicoletti, Brent Schmidt, Douglas Schroeder, Andrew Van Buskirk, and Haiwen Zhang and workshop participants from the Ohio State, Rice University, University of Georgia, University of Utah, George Mason University, University of Kansas, Tulane University, University of Illinois at Chicago, Michigan State University, Pennsylvania State University and the Deloitte doctoral consortium. I am grateful to former PCAOB board members Jim Doty and Jeanette Franzel, various PCAOB inspectors and researchers and EY broker-dealer subject matter expert Stephen Verrone for sharing their knowledge of institutional details. I gratefully acknowledge financial support from the Fisher College of Business and the Deloitte Foundation Doctoral Fellowship.

Finally, I thank my husband, Jeff, my kids Tyton, Lola and Olivia, and my parents Dennis and Jane for their continuous encouragement and support.

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Chapter 1: Introduction

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank) expanded the Securities Exchange Commission (SEC) oversight of public companies to the broker-dealer industry by initiating Public Company Accounting Oversight Board (PCAOB) inspections of broker-dealer audits. This inspection requirement extends to broker-dealer subsidiaries of bank holding companies (BHCs) that also have commercial bank subsidiaries. This paper examines the extent to which the PCAOB inspections of broker-dealer audits impact the accounting quality at affiliated commercial banks. The spillover effect of these inspections to commercial banks with broker-dealer affiliates is especially important due to the significance of high-quality accounting in the prudential regulation of the banking industry.[1] Additionally, bank diversification has been a debatable issue, and understanding how regulation aimed at one subsidiary impacts another subsidiary is informative to that debate.

BHCs consolidate the financial statements of commercial banks and their affiliates for financial and regulatory reporting purposes. Many BHCs have only one or two

[1] GAAP financial accounting figures are used in regulatory reporting. Regulators use the calculations in the regulatory reports to assess the safety and soundness of the banking institution which has implications for the stability of the market as a whole.

operating subsidiaries, often the commercial bank and a broker-dealer.[2] The broker-dealer facilitates trading for customers or affiliates (broker) and initiates underwriting of investment products (dealer). Federal banking laws limit speculative trading by commercial banks and require a separation of the two services offered to customers (i.e., banking and investing).[3] As a result, the organizational structure of BHCs is a consolidated entity with legally separated subsidiaries.[4] However, from an operational standpoint, these affiliated subsidiaries do not operate in isolation. The affiliates often report to the same C-level management team, share resources, and have the same independent auditor.

Banks have not always been allowed to offer both commercial and investment banking services. The Glass-Steagall Act (GSA), which was passed in 1933 in response to nationwide commercial bank failures, separated commercial and investment banking activities. This separation was deemed necessary because banks issue deposits payable on demand at par and allowing banks to provide speculative investment services could create conflicts of interest given the higher risks and rewards of these services (Federal Reserve, 1982). Over the next several decades, this restriction was gradually relaxed as banks began to offer investment advice, products, and transactional support to their commercial bank clients.[5] The Gramm Leach Bliley Act (GLBA), which passed in 1999, repealed GSA and allowed commercial banks, investment banks, and insurance companies to merge.

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[2] See Appendix A for examples of bank organizational structures.

[3] Investing related to the broker-dealer refers to offering investment services to customers, not investments the bank or broker-dealer makes with its own assets.

[4] Broker-dealers can be standalone entities, or part of a larger organization, often owned by BHCs or insurance companies. Investment and underwriting services offered by a broker-dealer complement other services offered by these types of financial institutions; therefore, to expand and diversify their revenue streams, banks and insurance companies often prefer to have an in-house broker-dealer.

[5] Banks used a variety of loopholes to engage in nonbanking activities, such as forming Section 20 subsidiaries. A series of waivers and decisions by the Federal Reserve starting in 1987 expanded the

In the late 1990s and early 2000s, many BHCs in anticipation of and response to the passing of GLBA acquired or established broker-dealer investment banking subsidiaries. Registering the investment subsidiary as a broker-dealer allows for the underwriting and introduction of securities to the market. Although prior research finds that establishing broker-dealers increased banks' value, profitability, and risk (Akhigbe & Whyte, 2004; Neal & White, 2012; Filson & Olfati, 2014; Elsas, Hackethal, & Holzhauser, 2010), the impact of this type of bank diversification on accounting quality has not been studied.

In response to the most recent financial crisis, the Dodd-Frank Act reinstated some regulation of commercial banks' investing activities. Specifically, the Volcker Rule restricts speculative trading by commercial banks. Dodd-Frank also gave oversight authority of broker-dealer audits to the Securities Exchange Commission (SEC), which includes PCAOB audit oversight. PCAOB audit oversight has many costs and benefits. One primary and well-documented benefit, is an improvement in accounting quality.

Broker-dealer auditors, regardless of whether they have other public company clients, were required to register with the PCAOB as of December 31, 2008. However, not until 2010 did the Dodd-Frank Act grant the inspection authority of broker-dealer audits to the PCAOB. Bill Gradison, former PCAOB board chair, stated that "one of his top priorities in his mission to protect investors was to focus on broker-dealers." Other PCAOB board members echoed this sentiment in speeches and discussions, and the board directed substantial resources to this new requirement. The PCAOB broker-dealer inspection program differs from the PCAOB inspections of publicly traded companies established

underwriting powers of banks and signaled that GSA would eventually be repealed (Akhigbe & Whyte, 2004).

under Sarbanes-Oxley (SOX). SOX inspections are conducted on a market risk basis and focus on specific accounts that are judgmental and have high audit risk, such as goodwill and deferred taxes. The broker-dealer audit inspections have been much more far-reaching, inspecting a broad cross section of broker-dealer audits and covering the entire audit.[6]

Because of the comprehensive nature of the broker-dealer inspections, along with heightened scrutiny, and a vast number of inspection findings, auditors of broker-dealers were put on notice to dramatically improve their audit process. The PCAOB annual report discloses at a high level the results of the broker-dealer inspection program. This report, combined with empirical evidence from academic research, suggests the broker-dealer inspection program has improved broker-dealer audit quality. This improvement is expected based on the additional rigor in this program and the evidence from prior literature that PCAOB inspections improve audit and accounting quality. Therefore, the inspection initiation provides a shock that can assist in identifying the impact of the broker-dealer regulation on an affiliated commercial bank. If regulation aimed at the broker-dealer spills over to impact the affiliated commercial bank, we should see a change in accounting quality at the commercial bank.

I examine the spillover effect of PCAOB broker-dealer inspections on commercial bank accounting quality using a difference-in-differences design that compares banks with and without broker-dealer subsidiaries pre and post PCAOB inspection initiation.[7] Because

[6] The inspections also go beyond the financial statements to examine customer protection which the auditor must opine on.

[7] A key assumption in the difference-in-differences research design is that the control and treatment group follow parallel trends in the outcome variables and would continue to do so absent treatment. Although this assumption is fundamentally untestable, I provide some evidence in Figure 3 that it is a reasonable assumption.

individual PCAOB inspection reports are not publicly available, I document an on average effect for all banks with affiliated broker-dealers.[8] Although the difference-in-differences design helps to mitigate concerns regarding macroeconomic factors and time trends affecting bank accounting quality, the choice to operate a broker-dealer subsidiary could affect the comparison of banks with and without broker-dealer subsidiaries. The decision to either start or purchase a broker-dealer subsidiary is not exogenous. Bank management, owners, and boards consider many factors when choosing this business model. If this choice is correlated with changes in commercial bank reporting quality surrounding the introduction of PCAOB broker-dealer inspections, it could create selection bias. To address this concern, I compare observable metrics related to size, profitability, risk, leverage, liquidity, complexity, geographic location, age, and loan-portfolio composition. These attributes may differ between the two groups, which could affect both their choice to operate a broker-dealer subsidiary and their accounting quality. Therefore, I use entropy balancing for the first three moments - mean, standard deviation, and skewness - of those variables to balance my sample. I also use inverse probability weighting as an alternative to address the selection bias, and conduct cross-sectional analysis on only the banks with broker-dealer subsidiaries.

The main proxy for changes in bank accounting quality is loan-loss provision validity. Because the loan-loss provision is the bank's most significant discretionary accrual, a change in provision validity indicates a change in accounting quality. I find a stronger association between the provision and subsequent charge-offs for banks with broker-dealer

[8] I visited the PCAOB in March 2017 and verified that over two thirds of the sample of bank-owned broker-dealers I identified for this study had been inspected and several more inspections were scheduled.

affiliates than for banks without broker-dealer affiliates post PCAOB inspection initiation, suggesting an increase in provision validity.

To corroborate the provision validity findings, I separately examine commercial and industrial loan (C&I) provision validity, because heterogeneity of C&I loan terms provides considerable discretion in determining the provision. I also perform cross-sectional tests within the subsample of BHCs, with both broker-dealer and commercial bank subsidiaries. I examine public/private ownership, the relative size of the broker-dealer to the commercial bank, and higher/lower capital adequacy of the bank as an incentive to manipulate the provision. To further confirm the provision validity results, I use alternative accounting quality proxies, specifically earnings persistence and earnings predictability of cash flows, to capture a broader construct of accounting quality.

I hypothesize that improvement in the consolidated audit process is one primary mechanism that leads to changes in accounting quality at the commercial bank. A broker-dealer and a commercial bank that are part of the same consolidated entity often engage the same auditors. If the subsidiaries engage different auditors or have different teams within the same audit firm, the auditor of the largest subsidiary is the lead auditor. The lead auditor is responsible for the consolidated opinion and must place reliance on the opinion of the secondary auditor. If the audit process improves for one subsidiary, we can reasonably assume the improvement spills over to other areas of the audit engagement. The most significant PCAOB findings in broker-dealer audit inspections are related to documentation and evidence for estimates in areas requiring auditor judgment. The loan-loss provision is a significant estimate that requires auditor judgment. To the extent the

auditors improve their audit of estimates throughout the engagement, the provision would be more accurate.

To test this hypothesis, I identify situations in which the spillover effect could be most attributable to consolidated audit-process improvements, specifically, when the auditors are the same between the bank and the broker-dealer, during the fourth quarter when auditors perform the majority of substantive procedures compared to the other three quarters, and when the bank auditor has greater exposure to regulatory pressure from the PCAOB. These tests further corroborate that the accounting quality change results from PCAOB oversight because inspections directly examine the audit process. These audit-related tests also substantiate the anecdotal claims from auditors in the industry.

This paper provides three main contributions to the accounting literature. First, I document a spillover effect of regulatory oversight between affiliated subsidiaries. This within-entity spillover effect is particularly relevant in highly regulated industries with diverse subsidiaries. It also suggests an unintended benefit relevant to the current debate surrounding BHCs' ownership of investment banking subsidiaries. Second, I contribute to the literature on PCAOB inspections and provide evidence on the costs and benefits of the PCAOB broker-dealer inspection program, which is a continued focus of the PCAOB.[9] Third, I contribute to the literature regarding auditor and managerial judgment related to discretionary accruals, specifically, banks' loan-loss provisions.

[9] In his first public speech as chairman, delivered in May 2018, the new PCAOB Chairman, William Duhnke, said determining the future of the broker-dealer inspection program was a priority of the new board.

Chapter 2: Related Research and Hypothesis Development

2.1 Related Research

This paper is related to three streams of literature. The first is the impact of regulation on accounting quality, specifically, the PCAOB inspections. The Sarbanes-Oxley Act in 2002 created the PCAOB, and prior research examines the effect of the inspections with some empirical challenges. The SOX-related literature encounters difficulty reaching conclusions because there is not an adequate control sample of firms unaffected by the legislation (Leuz C. , 2007; Hochberg, Sapienza, & Vissing-Jorgensen, 2009). The lack of a control group makes conclusions related to SOX difficult due to confounding financial, economic, and political changes (Coates, 2007; Illiev, 2010). Also, the SOX-initiated PCAOB inspection process is based on market risk, which initially resulted in only the largest audits being chosen for inspection. This selection limited the early inspections to audits conducted almost exclusively by Big 4 audit firms. More recently, studies have used an international setting to more clearly distinguish the inspections from the other provisions

within SOX and to obtain more variation in audit firms subject to inspection (Lamoreaux, 2016; Krishnan, Krishnan, & Song, 2017; Fung, Raman, & Zhu, 2017).[10]

An extensive literature evaluates the costs and benefits of PCAOB inspections. One commonly examined benefit is an improvement to audit quality. Overall, the results of prior studies indicate a positive association between the inspections and audit quality. These studies reach this conclusion based on evidence of the exit of smaller unqualified firms from the market and a reduction in abnormal accruals by auditees. They also find a stronger improvement in the audits conducted by Big 4 firms (Carcello, Hollingsworth, & Mastrolia, 2011; Lennox & Pittman, 2010; Abbott, Gunny, & Zhang , 2013). The international studies also report improved audit quality, measured by a higher propensity to issue going-concern opinions, more reported material weaknesses, less earnings management, lower abnormal accruals, and greater value relevance (Lamoreaux, 2016; Krishnan, Krishnan, & Song, 2017; Fung, Raman, & Zhu, 2017). Similarly, using proprietary data from the PCAOB, researchers find the PCAOB inspections improve audit and overall accounting quality (Aobdia, 2017).

Prior research has also explored the economic impact from a cost perspective with mixed results. These studies use overall market reaction and increased audit fees to measure costs. (Illiev, 2010; Leuz & Wysocki, 2016; Leuz C. , 2007; Zhang, 2007; Smith, 2012; Wang & Zhou, 2012). The broker-dealer inspection program has received criticism due to the magnitude of the costs associated with the program. Recruiting inspectors with

[10] Various foreign countries have more recently allowed for PCAOB inspection of cross-listed firms' audits, thus separating these inspections from SOX on a staggered basis.

specialized broker-dealer auditing experience is a challenge, and determining whether the benefit outweighs the cost of training and maintaining the workforce to carry out the broker-dealer inspections is difficult.[11] I build on the evidence in this cost/benefit literature by investigating a potential benefit of improved accounting quality at the affiliated commercial bank.

The second stream of literature that I contribute to is studies focusing on the broker-dealer inspection program. This area has very few academic studies, mainly due to data limitations. Broker-dealer financial statements and the identity of the inspected broker-dealers are not publicly available. Two descriptive papers provide a backdrop for this analysis. They discuss the issues that led to changes in the broker-dealer regulatory environment and the audit implications, highlighting progress made and indentifying continuing challenges (Bedard, Cannon, & A.Schnader, The Changing Face of Auditor Reporting in the Broker-Dealer Industry, 2014; Kowaleski, Cannon, Schnader, & Bedard, 2018). My paper adds to their discussion by examining ownership of the broker-dealers, and offers more institutional details and challenges specific to the banking sector.

Two academic studies examine outcomes of the broker-dealer inspection program. The first study uses FINRA sanctions as an outcome variable and finds a slight improvement in accounting quality when the auditors are global network firms. In contrast, for smaller audit firms the lower reporting quality observed before the shift in regulatory regime is exacerbated (Bedard, Cannon, Kowalkeski, & Schnader, 2018). The second study,

[11] Former PCAOB chairman and SEC chief legal counsel, Jim Doty, mentioned that no formal cost-benefit analysis was performed prior to the implementation of the broker-dealer inspection program.

(Kowaleski 2017), finds that auditor size and partner specialization predict audit adjustments when privately owned broker-dealers change audit firms. The study concludes that small audit firms tolerate higher risk, and that risk is more pronounced when the demand for audit quality by the broker-dealer is low (Kowaleski, 2017). To overcome the data limitations, he uses proprietary data from the PCAOB to identify inspected broker-dealers and obtain outcome variables such as audit adjustments. My paper adds to these studies by providing evidence that improvement to accounting quality in this setting is more pronounced in the larger audit firms with the most PCAOB regulatory pressure. Although both studies focus on smaller, private broker-dealers, this paper examines a subset, namely, those owned by banks, which have a unique role in the market, and documents a benefit neither the literature nor the PCAOB has yet considered when evaluating this program.

Another area this paper is related to is the line of research examining bank diversification in the repeal of Glass-Steagall with the Gramm Leach Bliley Act (GLBA). Researchers find that GLBA has a positive impact on profitability and shareholder value, but is also associated with increased risk-taking behavior by banks (Akhigbe & Whyte, 2004; Neal & White, 2012; Filson & Olfati, 2014; Elsas, Hackethal, & Holzhauser, 2010). This paper expands this literature by providing evidence that GLBA led to a decline in accounting quality, however, audit oversight through PCAOB inspections of broker-dealer audits mitigates this decline. It provides an opportunity to improve the understanding of the role of the broker-dealer in the BHC and its affiliated commercial bank. This

relationship is one that the banking literature largely ignores but can have a significant impact on the financial stability of the bank.

2.2 Hypothesis Development

The main research question is whether PCAOB inspection of an affiliated broker-dealer audit affects a commercial bank's accounting quality.[12] Based on the previous discussion of the prior PCAOB inspection literature, this paper assumes that these inspections improve the accounting quality at the broker-dealer; however, whether the inspections have an impact on the accounting quality of the affiliated bank is unclear. Other provisions in Dodd-Frank aimed directly at the bank might have a more direct effect on improving the bank's accounting quality; however, this paper evaluates whether regulation specific to the broker-dealer affects the affiliated commercial banks, incrementally and separately from any direct effect of Dodd-Frank.

If the accounting quality at the bank changes after initiation of PCAOB inspection of the broker-dealer audits, the changes could be positive or negative. The overall accounting quality for the consolidated entity might have an optimal level, and improvement at one subsidiary could lead to a decline in quality at an affiliated subsidiary. Alternatively, the additional effort to comply with the regulations at the broker-dealer could lead to a decline in the effort put into accounting issues at the commercial bank because of limited resources.

[12] I do not attempt to distinguish between audit quality and financial reporting quality in this hypothesis but refer to them collectively as accounting quality.

However, these adverse effects might, on average, be subsumed by the motivation and mechanisms for improvement to the bank's accounting quality. Therefore, I predict a positive association between the broker-dealer PCAOB audit inspections and accounting quality at the bank. Based on discussions with auditors in this industry, the PCAOB inspections of broker-dealers are substantial because they are comprehensive and because of the large number and severity of the findings.[13] The auditors react strongly to the inspections, and their reaction extends to the bank audit because of affiliations between the broker-dealer and commercial bank. To evaluate a change related to the broker-dealer subsidiary, I compare banks with broker-dealer affiliates with to those without. My main hypothesis follows:

H1: After the initiation of PCAOB broker-dealer inspections, the accounting quality at banks with broker-dealer affiliates improves relative to banks without broker-dealer affiliates.

Evidence of a positive change to the accounting quality at the bank after the PCAOB broker-dealer inspection initiation would support this hypothesis. I interpret this change as regulation aimed at the broker-dealer subsidiary affecting the affiliated bank. A lack of evidence might indicate the bank and broker-dealer subsidiaries operate independently and

[13] In the first inspection report dated August 2012, the PCAOB reported that 21 of 23 (91%) audits inspected found firms "failed to perform sufficient audit procedures to obtain reasonable assurance that material inadequacies existed at the date of examination." The PCAOB did not report the number of deficiencies by audit area, but described the types of deficiencies they found. In the PCAOB report released in August 2013, 43 of 60 (72%) audits inspected had findings related to audit deficiencies, and this report provided details on audit areas. The areas with the most deficiencies were: failure to report material inadequacies in net capital rules (62%); risk of material misstatement due to fraud (62%); revenue recognition (70%); reliance on records and reports (50%); related party transactions (42%); and fair value measurement (48%). In each subsequent year, the percentage of audits with findings has decreased, which the PCAOB interprets as success in the program. In addition, each year the reports provide additional information on types of identifies deficiencies.

that the broker-dealer's accounting quality does not influence the bank's accounting quality.

Because the PCAOB inspections focus on the audit process, and because findings are directed at the audit firms, the auditors' motivations are likely driving any PCAOB inspection-related changes that occur. The auditors' motivations post PCAOB inspections are related to career concerns, PCAOB sanctions, and litigation risk, which lead to improvements in accounting quality. These concerns are especially pervasive in this setting due to the significance of the findings in the broker-dealer inspection program, and the comprehensive nature relative to the issuer inspection program. Therefore, consistent with a directional prediction related to the first hypothesis, the second hypothesis focuses on this channel of improvement. Evidence that audit-process improvements are the mechanism provides further corroboration that the broker-dealer PCAOB inspections improve accounting quality at the commercial bank.

The improvement could be through another mechanism. An improvement in accounting quality is most likely a joint function of financial reporting improvement and audit quality improvement. Accounting quality could improve even absent auditor influence. The additional scrutiny and expertise required to comply with the broker-dealer regulations might create a corporate environment of compliance that may spill over into the commercial banks, for example, through shared management, systems, controls, policies, and risk tolerance. The tests conducted in this paper do not rule out the possibility that a portion of the improvement might be attributable to improved entity-wide financial-reporting quality unrelated to the audit process. However, I predict that the most influential

mechanism by which the PCAOB inspections influence the accounting quality is through audit-process improvements because the inspections focus on the audit process and the auditors, not on management.

The audit quality at the commercial bank is most likely to improve if the bank and broker-dealer subsidiary share an audit team or audit firm. PCAOB comments or sanctions related to the broker-dealer audit would directly affect the level of scrutiny that the audit team adopts while auditing the affiliated bank. Changes in the audit process as a result of the additional scrutiny may occur in audit planning, substantive testing, and interactions with management, the audit committee, and the board. Additional scrutiny is likely in estimates requiring judgment, such as the provision for loan losses. The auditors meet with the audit committee and board of directors at least annually, and often quarterly for larger, public banks, for the auditors to "sign off" on judgmental areas such as the provision before the bank issues financial statements. Then, the auditors meet with the audit committee after completion of the audit to report the results of the audit and discuss in more detail how they become comfortable with estimates requiring judgment. When these meetings occur, members of the audit committee, management, and board at the commercial bank and the broker-dealer subsidiaries often overlap. Discussions regarding the consolidated entity include both teams. Therefore, if shared auditors are present, these meetings occur concurrently. When PCAOB inspection leads to improvements to the broker-dealer audit, a reasonable assumption is that the bank audit undergoes similar improvements as part of this audit review process.

The improvement should be most significant when the broker-dealer and bank have the same auditors, specifically, the same audit team. However, observing specific auditors on each team, as opposed to only the firms that audit the bank and broker-dealer, is not possible with publicly available data. If a firm assigns different audit teams to each subsidiary audit, an overall engagement partner oversees all parts of the audit. If the bank and broker-dealer engage different audit firms, the lead auditor will reference and rely on the other audit firm's work, particularly if it is material to the consolidated entity. Based on this reliance, I would find an effect regardless of whether the bank and broker-dealer engage the same or different auditors. However, I expect the effect to be stronger if they use the same audit firm.

This spillover also can occur through carryover to a particular auditor's other engagements or through firm-wide initiatives and training related to the sanctions. In particular, it would carry over to an auditor's other broker-dealer clients. As mentioned previously, at the time of this study 67% of the banks with broker-dealers had been inspected, with more scheduled in the next year. Based on this extensive coverage, a reasonable assumption is that if an auditor's broker-dealer client had not yet been inspected, the auditor could expect an inspection to be imminent. This deterrence effect would lead to a change in behavior by auditors of all banks with broker-dealers regardless of whether they had been inspected at the time of this study. Prior research has found both the within-firm and peer-firm spillover effect of PCAOB inspections (Aobdia, 2017; Boone, Khuranan, & Raman, 2015). This spillover could also affect banks without broker-dealer subsidiaries; however, spillover to banks without broker-dealer subsidiaries would

bias against finding a significant difference when comparing banks with versus without broker-dealer subsidiaries.

Besides the inspection effect, PCAOB oversight of the audits of broker-dealers and sanctions issued to the auditors has resulted in an exit of unqualified firms from this industry. Prior research finds that the exit of underqualified firms due to Sarbanes Oxley had a positive impact on audit quality (Defond & Lennox, 2011; Abbott, Gunny, & Zhang , 2013). Therefore, the audit quality in the broker-dealer industry should have improved, on average, for audits in this industry, due to the exit of unqualified firms. Also, in response to market, PCAOB, and SEC criticism of broker-dealer audits, many audit firms require additional training, certification, and expertise for the auditors placed on the engagement team of a bank with a broker-dealer subsidiary. This additional expertise should improve the audit quality of these engagements.

Therefore, the audit process can improve through a shared audit team or audit firm, reliance on secondary audit firms, additional training for broker-dealer audits, and the exit of unqualified firms. My second hypothesis follows:

H2: After the initiation of PCAOB broker-dealer inspections, the improvement to the accounting quality at banks with broker-dealer affiliates is due to improvements in the audit process.

Evidence consistent with this hypothesis would suggest that improvement to the audit process is a mechanism through which an improvement in the bank's accounting quality is occurring post PCAOB inspection of the broker-dealer affiliate.

Chapter 3. Sample and Research Design

3.1 Sample

I obtain data from the 2005-2016 year-end Y-9C reports for BHCs and from the 2005-2016 year-end Call reports for commercial banks to gather necessary information and construct the samples. The BHC is the level at which the audit firm, the SEC status, the complexity factor (calculated by the BHC's regulators), the geographic operating region, and other identifying data are available. For tests using Call report data where variables are only available at the BHC level, I link the commercial bank to its corresponding holding company. I drop over 4,000 control bank observations of commercial banks without holding company information, an appropriate choice because commercial banks without a holding company are less comparable to the BHCs with broker-dealer subsidiaries. For all sample banks with and without broker-dealer subsidiaries, I collect both BHC level data and commercial bank level data.

The sample begins in 2005 because this is the first year in which the bank's audit firm information is available on the Y-9C report, a key variable for testing H2. I set a post-period indicator to 1 in the years after 2012. According to the inspection teams at the PCAOB, the inspection program began in 2011; however, only 13 broker-dealer audit

inspections occurred in 2011. During the first year of the program, the PCAOB spent the majority of its time recruiting and training inspectors. Inspections increased significantly in 2012. Therefore, 2012-2016 is an appropriate post-period. I also include year fixed effects to mitigate the concern that differences arise related to specific years in the sample. I perform sensitivity tests to help ensure that the period selected is not driving the results.

The sample includes only BHCs with total assets greater than or equal to $500 million to eliminate BHCs that are unaudited and too small to be comparable. This cutoff allows for the inclusion of all the BHCs identified with broker-dealer subsidiaries because the smallest BHC with a broker-dealer subsidiary has approximately $600 million in total assets. I also exclude BHCs with greater than $500 billion in total assets.[14] Eliminating the largest BHCs provides better common support between the treatment and control groups because all BHCs with over $500 billion in total assets operate a broker-dealer subsidiary. Also, little cross-sectional variation is present in audit firm type for the largest BHCs. In sensitivity tests, I alter the size thresholds for the sample to help ensure the choice of the size cutoff is not driving the results.

To identify BHCs with broker-dealer subsidiaries, I use the National Information Center database, which is a repository of financial data and institutional characteristics collected by the Federal Reserve System. This database contains banks' organizational hierarchy by entity type. I gather entity types listed as "Broker-Dealer" or "Domestic Entity Other" and compare them to an index file of all SEC X17A-5 filings, which are the broker-dealer reports. I review the line item "fees and commissions from security brokerage and

[14] This includes eight banks: Bank of America, JPMorgan Chase, Wells Fargo, Citigroup, Goldman, Morgan Stanley, Metlife, and Wachovia.

investment banking, advisory, and underwriting fees and commissions" on the BHCs' Y-9C reports to verify that the BHCs I identify with a broker-dealer subsidiary report the associated income. Ownership data from FINRA validates these ownership relationships. I also search the FINRA data for additional broker-dealers with bank ownership. These steps result in the identification of 111 unique BHCs with broker-dealer subsidiaries.

3.2 Research Design

3.2.1 Entropy Balancing

The decision to own and operate a broker-dealer subsidiary is not an exogenous choice, and characteristics associated with this choice could also affect the bank's provisioning practices and the overall reporting quality at the bank. The shock to the audit quality at the broker-dealer, which is separate from and independent of the choice to operate a broker-dealer, is the most powerful tool for addressing this concern. In an ideal experiment, the random treatment assignment of broker-dealer subsidiaries to banks would guarantee the treatment is independent of the outcome. Because random assignment is not possible, as an attempt to further address the endogeneity concern, I reweight the control group observations using entropy balancing to make them more statistically similar to the treatment group in mean, variance, and skewness.

Many researchers in social sciences use matching or weighting techniques to produce balanced samples in observational studies (Hainmueller, 2012).[15] Researchers in accounting often use matching or propensity-score methods to "pre-process" data before the estimation of binary treatment effects under the assumption of selection on observables (Abadie & Imbens, 2006; Ho, Imai, King, & Stuart, 2007). Matching or weighting helps address selection bias and estimate treatment effects. Prior research finds that weighting combined with linear regression improves the asymptotic efficiency and results in unbiased and consistent estimates of the average treatment effect (Imbens, 2004; Wooldridge, 2007). Weighting the observations effectively adjusts for systematic and random inequalities in the sample (Hainmueller, 2012).

Entropy balancing is one of the weighting methods used to improve the covariate balance between the treatment and control groups to make the treatment variable more independent of background characteristics. The primary advantage of using entropy balancing over other methodologies is that it achieves a better covariate balance through directly incorporating the desired covariate distributions into a constrained optimization problem. Solving the optimization problem involves searching for a set of weights to achieve the desired levels of covariate balance. The weights are then assigned to the control group to make it more statistically similar to the treatment group.

Another critical advantage of entropy balancing, particularly over a matching method, is that it allows the researcher to keep all observations rather than discarding the

[15] Jens Hainmueller, Department of Political Science at Massachusetts Institute of Technology, proposed entropy balancing in 2011 as a "data preprocessing method to achieve covariate balance in observational studies with binary treatments."

observations that do not match. Relevant information in the sample is potentially lost when observations are excluded. Entropy balancing assigns continuous weights, rather than one or zero, while keeping the relative importance of each variable. This method is appealing when the sample is small or when suitable matches along multiple dimensions do not exist because weighting allows for using many covariates while avoiding misspecification (Hirano, Imbens, & Ridder, 2003).

In addition, entropy balancing allows for a broad set of variables on which to balance and allows for balancing multiple moments. This feature is attractive because it allows the researcher to use known information about the data to design the weighting appropriately. In this study, many of the variables contain considerable variation and skewness; therefore, weighting on mean, variance, and skewness is a crucial attribute. Variation and skewness are common in accounting variables, and studies show that entropy balancing on the first three moments achieves a greater covariate balance, particularly in cases where discretionary accruals are the outcome variable (McMullen & Schonberger 2018).

To execute entropy balancing, I identify observable characteristics potentially associated with a bank's choice to own or operate a broker-dealer and with the outcome variables. The following is a list of these characteristics: (1) return on assets as a proxy for profitability, (2) an indicator variable set to one if the bank has publicly traded shares registered with the SEC; (3) the Tier 1 capital ratio as a proxy for both risk-taking behavior and capital adequacy at the bank; (4) liquidity and leverage as proxies for cash and borrowing needs; (5) the percentage of heterogeneous loans in the loan portfolio as a proxy for diversity in the loan characteristics; (6) the age of the bank as a proxy for experience;

(7) the Federal Reserve region in which the bank operates as a proxy for differing regulatory oversight; (8) the count of commercial bank subsidiaries that consolidate under the BHC; and (9) the BHC complexity indicator from the Y9-C reports, which determines the intensity of the supervisory approach. [16] [17]

In all tests that include both banks with and without broker-dealer subsidiaries, I estimate the regressions using entropy balancing. As an alternative approach, I utilize inverse probability weighting to address the potential selection bias in Section 6.1.

3.2.2 Loan-Loss Provision Validity

For banks, one of the most prominent and important discretionary accruals is the reserve for loan losses. The loan-loss provision is the income statement account that increases the allowance for loan losses, whereas loan charge-offs reduces the allowance. Prior research has found that banks manage the provision for loan losses to smooth earnings and manage regulatory capital (Beatty & Liao, 2014; Kanagaretnam, Lobo, & Yang, 2004; Kim & Kross, 1998; Kanagaretnam, Lobo, & Yang, 2004; Beaver & Engel, 1996; Beatty, Chamberlain, & Magliolo, 1995; Collins, Shackelford, & Wahlen, 1995; Bushman & Williams, 2012). Therefore, in a banking setting, a significant variable for measuring accounting quality is the provision for loan losses. The advantages of using a discretionary accrual-based measure is that it captures within-GAAP manipulation and is also linked to the continuous nature of the audit and reporting quality (Defond & Zhang, 2014). Also,

[16] The majority of banks in this sample are regulated by the Federal Reserve but variation in regulatory pressure could come from differences in which Federal Reserve region provides oversight to the bank.
[17] Variable calculations can be found in Appendix B.

by examining the commercial bank provision, the focus is on the spillover effect to the bank, rather than the effect to the broker-dealer.

My main test variable is a measure of how well a bank's current-year loan-loss provision predicts one-year ahead charge-offs, that is, provision validity. In measuring the provision validity, I hold the change in non-performing loans constant because they are a relatively non-discretionary measure of potential loan losses. Therefore, to assess the validity of the provision I follow Altamuro and Beatty (2010), and estimate the following model to test my hypothesis:

$$CHGOFF_{t+1} = \alpha + \beta_1 POST + \beta_2 BDBANK_t + \beta_3 POST*BDBANK_t + \beta_4 LLP_t + \beta_5 POST*LLP_t + \beta_6 BDBANK_t*LLP_t + \beta_7 \mathbf{POST*BDBANK*LLP_t} + \beta_8 \Delta NPL_t + \beta_9 SIZE_t + \beta_{10} SIZE*LLP_t + \varepsilon_t. \quad (1)$$

where:
CHGOFF: Charge-offs recorded as reported in the Y-9C scaled by beginning assets
LLP: Loan loss provision scaled by beginning assets
POST: Post indicator set to one after initiation of PCAOB broker-dealer inspections (after 2011)
ΔNPL: The change in the non-performing loans scaled by beginning non-performing loans
SIZE: The natural log of total assets in millions
BDBANK: Indicator set to one if a broker-dealer subsidiary exists and 0 otherwise.

Examining the magnitude of the allowance alone is not as effective as examining the validity of the provision because of differences in loan portfolio risks across banks. Comparing the provision to subsequent charge-offs is an appropriate approach to determine provision validity because both the SEC and the OCC stipulate criteria for banks loss recognition and suggest testing subsequent charge-offs to verify provisions. According to the SEC guidance for estimating loan losses, SAB102, a bank's loan-loss-allowance

method is valid when it "include(s) procedures that adjust loan loss estimation methods to reduce differences between estimated losses and actual subsequent charge-offs" (SEC, 2001). The OCC has similar criteria and argues that "bankers and examiners should verify the reasonableness and accuracy of loss estimation methodologies. 'Back-testing' should be considered to evaluate the accuracy of loss estimates from prior periods" (OCC, 1997).

In an extension to the model, I also include the following control variables capturing the characteristics of the loan portfolio: (1) Tier 1 risk-weighted asset-to-capital ratio as a proxy for the riskiness of the loan portfolio; (2) the ratio of heterogeneous loans to total loans as a proxy for the portion of the loan portfolio for which a provision likely includes more discretion; and (3) the change in loans as a proxy for the growth in the loan portfolio, which may indicate changes in lending practices or risk preferences.

Often, research on loan loss provision quality examines the timeliness rather than the validity of the provision. Timeliness captures the extent to which expected losses are recognized in the provision regardless of loss incurrence or the loss-probability threshold, whereas the validity measure substantiates the incurred-loss provision by comparing it with subsequent charge-offs. Because improvement to the financial reporting quality through audit-process improvement is the construct I am attempting to capture, the validity measure is more appropriate in this setting. Auditors examine the procedures in place to ensure the non-performing loans are recognized in losses in accordance with GAAP, under the incurred-loss model. However, the auditor's central verification of any accrual is the subsequent realization, which is the subsequent charge-offs of the loans.

3.2.3 Earnings Persistence and the Predictability of Cash Flows

Although using the provision-validity measure has clear advantages, particularly in the auditor setting, the concern may be that it does not capture overall accounting quality. To provide confirming evidence consistent with the first hypothesis, I perform additional analyses using two earnings-quality measures: (1) earnings persistence and (2) earnings predictability of cash flows. These measures capture the overall accounting quality and allow for the possibility that bank managers may use accounts other than the provision to manipulate earnings or capital adequacy.

High-quality earnings not only accurately reflect the current underlying performance of the firm, but should also be a good predictor of future operating performance (Dechow & Schrand, Earnings Quality, 2004). Under this argument, prior research uses earnings persistence as a measure of accounting quality (Altamuro & Beatty , 2010; Dechow & Dichev, 2002) but persistent earnings could also result from earnings smoothing. Examining earnings predictability of future cash flows can help mitigate this concern. Therefore, following Altamuro and Beatty (2010), I estimate these two models as related earnings-quality measures:

$$ROA_{t+1} = \alpha + \beta_1 POST + \beta_2 BDBANK_t + \beta_3 POST*BDBANK_t + \beta_4 ROA_t + \beta_5 POST*ROA_t + \beta_6 BDBANK_t*ROA_t + \beta_7 \mathbf{POST*BDBANK*ROA_t} + \beta_8 SIZE_t + \beta_9 SIZE_t*ROA_t + \varepsilon_t \quad (2)$$

and

$$EBLLP_{t+1} = \alpha + \beta_1 POST + \beta_2 BDBANK_t + \beta_3 POST*BDBANK_t + \beta_4 ROA_t + \beta_5 POST*ROA_t + \beta_6 BDBANK_t*ROA_t + \beta_7 \mathbf{POST*BDBANK*ROA_t} + \beta_8 SIZE_t + \beta_9 SIZE_t*ROA_t + \varepsilon_t. \quad (3)$$

where:
ROA: Return on assets measured as net income scaled by beginning assets
EBLLP: Earnings before loan-loss provision scaled by beginning assets
POST: Post indicator set to one after initiation of PCAOB broker-dealer inspections (after 2011)
SIZE: The natural log of total assets in millions
BDBANK: Indicator set to one if a broker-dealer subsidiary exists and 0 otherwise.

Model 2 provides a measure of earnings persistence by estimating the coefficient on the current-period earnings (ROA_t) in a regression where the dependent variable is future earnings (ROA_{t+1}). A positive coefficient on the interaction-term, β_7, suggests that in the post-period, banks with broker-dealer subsidiaries have more persistent earnings than banks without broker-dealer subsidiaries. In model 3, the dependent variable is next year's earnings before provision, a bank-specific proxy for future cash flows, because the provision is the largest bank accrual (Whalen, 1994; Kanagaretnam, Lobo, & Yang, 2004). A significant and positive coefficient on the interaction-term, β_7, indicates that earnings better predict future cash flows in the post-period for banks with broker-dealer subsidiaries than for banks without broker-dealer subsidiaries.

For both of these models, I use call report data to isolate the commercial bank effect.[18] To determine the appropriate commercial banks to use in the sample, I manually search organization hierarchy and institutional-history data sets in the FFIEC database and hand-collect the commercial-bank identifiers for each of the BHCs with a broker-dealer

[18] I use the Y-9C BHC data in all other tests because they provide more detail related to the control variables (public, number of bank subs, etc.) and auditor variables. Although the Y-9C data include the broker-dealer as a consolidated entity, loan-loss provision and charge-offs are commercial-bank-level accounts. In untabulated analysis, I examine the main model at the commercial-bank level and results are quantitatively and qualitatively similar.

subsidiary. For commercial banks with a broker-dealer affiliate, the indicator variable for BDBANK is one. For commercial banks without broker-dealer affiliates, the BDBANK indicator variable is zero. I use size thresholds and time-periods consistent with the first tests.

3.3 Research Design (H2) – Auditor Mechanism

To test H2, I exploit cross-sectional variation in auditor characteristics. The tests allow me to make inferences regarding the mechanism driving the H1 results. I obtain auditor information for the bank from the March Y-9C reports and hand-collected auditor information for the broker-dealer for each year from the broker-dealer's X17A-5 filing, from the SEC's Edgar database. To obtain auditor firms' PCAOB inspection frequency and registration status, I search the PCAOB database by the signing audit firm name. To assess if the main result is specific to the audit process, I evaluate the effect when the bank and broker-dealer engage the same auditors, when more substantive testing occurs in the fourth quarter, and when the auditors have more exposure to the PCAOB. Each uses the provision validity as a proxy for accounting quality, similar to the primary specification. All cross-sectional analysis are conducted on only the banks with broker-dealer subsidiaires.

First, I test the impact of the bank and broker-dealer engaging the same versus different auditors, and predict that the effect will be stronger if the subsidiaries engage the same audit firm. I compare banks with broker-dealer subsidiaries that engage the same audit firm for the broker-dealer subsidiary audit and the commercial bank subsidiary audit with those that do not engage the same audit firms. I estimate seemingly unrelated regressions

and perform a Wald test to compare the coefficient of interest, the interaction between the provision and the post-period indicator, across the subsamples with the same and different auditors.

Two primary reasons exist for engaging different auditors. First, if either the broker-dealer or the commercial bank is immaterial to the consolidated entity, the holding company may engage a smaller audit firm on the immaterial subsidiary to obtain a lower audit fee. The second reason is that the commercial bank auditor may not have broker-dealer audit expertise. Additional technical and regulatory issues are specific to the broker-dealer industry that require additional expertise to conduct the audit. To control for each of these possible reasons, I include a variable for relative size and a variable for audit expertise in the regression. For relative size, I calculate the proportion of the BHC's revenue that is generated by the broker-dealer. To proxy for audit expertise, I use the distinction of Big 4 audit firm.

Next, using quarterly Y-9C data, I examine the impact in the fourth quarter relative to the other three quarters and predict the effect will be stronger in the fourth quarter if the mechanism is through improvement to the audit process. Prior literature shows that the auditors have considerable influence in the fourth quarter because that is when they perform the majority of substantive procedures and sign the audit opinion. This test requires the use of quarterly Y-9C data. Y-9C reports include year-to-date data; therefore, I first adjust all the income-statement variables to reflect the quarterly activity. Then, because I assume, on average, a one-year charge-off period for provisioned loans based on GAAP and OCC requirements, I calculate the current and prior three quarters' provisions

and compare the results with the next four quarters' charge-offs. Because of overlapping quarters, I include an indicator variable for each of the first three quarters and also interact the quarter indicator variable with the provision. I conduct simultaneous regressions using seemingly unrelated estimation to accurately reflect the standard errors and perform a Wald test to compare across coefficients for the variable of interest.

Last, I predict a stronger effect when the bank's auditor has more exposure to regulatory pressure from the PCAOB. With more pressure from the PCAOB, the bank's auditors might have a stronger reaction to the oversight of the broker-dealer subsidiary of their bank client. Two channels exist from which the auditors react to PCAOB pressure and exposure: (1) the PCAOB inspections of specific audit engagements, and (2) the inspections of the audit firm's operations.[19] Through the inspections of their audit engagements, the auditors react because of their understanding of the implications and the reputation risk associated with PCAOB findings in their audit engagements. Second, the auditors react to the PCAOB findings related to audit-firm procedures with firm-wide initiatives, training, and disciplinary measures. Therefore, based on these two channels, I measure PCAOB exposure in three ways: (1) if the bank has a Big 4 auditor; (2) if the bank's audit firm has annual inspections, rather than triennial or no inspections; and (3) if the bank's audit firm has other broker-dealer and SEC registered clients. The model is the same as model 1,

[19] The PCAOB inspects registered public accounting firms to assess compliance with the Sarbanes-Oxley Act, the rules of the Board, the rules of the Securities and Exchange Commission, and professional standards, in connection with the firm's performance of audits, issuance of audit reports, and related matters involving U.S. public companies, other issuers, brokers and dealers (pcaobus.org/inspections). The audit firm inspections are conducted based on the number of public company clients. The Big 4 firms were inspected first, after Sarbanes Oxley was passed, and continue to be inspected annually. Non-Big 4 audit firms with greater than 100 issuer clients are also inspected annually and audit firms with between 1 and 100 issuer clients are inspected triennially. Although the requirement for auditors of broker-dealers to register with the PCAOB began in 2008, the inspections of those audit firms did not begin until 2011.

except the variable PCAOB represents one of the three proxies, in the place of the BDBANK indicator.

Chapter 4: Empirical Results

4.1 Descriptive Statistics

Table 1 reports the descriptive statistics for the main variables. Panel A is the BHC sample used for the provision-validity tests, and Panel B reports descriptive statistics for the subset of within-broker-dealer banks for the H2 tests. Panel C reports the descriptive statistics for the commercial bank sample (CBANK sample).

Table 2 reports the results of the entropy balancing for both the BHC sample in Panel A and the CBANK sample in Panel B. This table also provides a comparison between broker-dealer banks and banks without broker-dealers in the univariate. The tables present the statistics before and after the weighting. These tables demonstrate that the two groups are statistically similar along various dimensions after the entropy balancing.

Table 3 provides more detail on the relation between the current-year provision and next year's charge-offs in the univariate analysis. Panel A reports the Spearman (Pearson) correlations above (below) the diagonal. The Pearson correlation is appropriate in this setting because it is better utilized for measuring interval scales, whereas Spearman is better utilized for ordinal (rank) scales. This table compares, for broker-dealer banks and non-broker-dealer banks, the change from the pre-period to the post-period in the

correlation between the provision and the next year's charge-offs. The Spearman /(Pearson) correlations suggest that the provision and charge-offs were less/(more) correlated in the post-period for both groups; however, the decline/(increase) in correlation was less/(more) significant for broker-dealer banks.

Table 3 Panel B reports the comparisons in the means of the ratio of current provision to next year's charge-offs (ratio) and the absolute value of that ratio less one (valid) for banks with broker-dealer subsidiaries in the pre/(post) periods to banks without broker-dealer subsidiaries in the pre/(post) period. The main difference between these two measures is that the second is an on-average ratio of provision to next year's charge-offs for all observations. The valid measure calculates the ratio for each observation (bank, year) and compares that ratio with one at the observation level. Therefore, the valid measure is the average distance from one for each observation's ratio of current provision to next year's charge-offs. In both cases, the banks with broker-dealer subsidiaries exhibit a stronger association between the current provision and the next year's charge-offs in the post-period relative to the pre-period than the banks without broker-dealer subsidiaries. Drawing a conclusion based on univariate evidence is difficult because a closer association to one could mean better provisioning, or could mean a decline in non-performing loans when the provision and charge-offs occur in the same period. Using regression analysis to control for changes in non-performing loans and other changes in the loan-portfolio composition can address those characteristics when evaluating the provision.

4.2 Main Results

Table 4 reports the results of OLS regressions for estimation model one as a test of the first hypothesis (H1). Columns 1 and 3 report the results of the main variables, interaction terms, and control variables including change in non-performing loans, size, and interaction terms, which follows the model used in prior research. Columns 2 and 4 add controls related to loan-portfolio composition. Columns 1 and 2 report the results before entropy balancing the sample, and columns 3 and 4 report the results after entropy balancing. All columns have year fixed effects, and continuous independent variables are standardized to a mean of zero and a standard deviation of one for ease of interpretation.

In all cases, the coefficient for the triple-interaction term is positive and statistically significant. These results suggest that for the banks with broker-dealer subsidiaries, the provision and future charge-offs in the post period are more highly correlated. This correlation is an indication of better reporting quality for the banks with broker-dealer subsidiaries post-PCAOB inspection initiation than for banks without broker-dealer subsidiaries. The magnitude of the coefficients is similar to those in Beatty and Altamuro (2010) on which the model is based.[20]

Although I am primarily interested in the treatment effect on the treated banks, those with broker-dealer affiliates, the main effects and double-interaction terms can provide information on the differences among other subsamples. In all cases, the provision is a significant indicator of future charge-offs. The interaction between the provision and the

[20] Beatty and Altamuro (2010) measure the effect of a change in regulation (FDICIA internal control requirements) and report coefficients of 0.2883 and 0.3498 on the interaction term between the post indicator, the provision, and the affected group indicator.

broker-dealer bank indicator has a significantly negative coefficient, which suggests the correlation between the provision and future charge-offs is weaker on average for broker-dealer banks in the pre-period than for banks without broker-dealers. I explore this result in the additional analysis in Section 5.5. The coefficient on the interaction between the provision and the post indicator is negative. This negative coefficient indicates a weaker association between the provision and future charge-offs in the post-period than in the pre-period for all banks.

The results for the alternative proxies for reporting quality - earnings persistence, and cash-flow predictability, models 2 and 3 - are tabulated in Table 5. The first two columns report the earnings-persistence measure. The significantly positive coefficient on the triple-interaction term indicates that in the post-period for commercial banks with broker-dealer affiliates, ROA is a better predictor of next-period ROA, suggesting more persistent earnings. In columns 3-4, the dependent variable is next year's earnings before loan-loss provision, a proxy for future cash flows. The positively significant coefficient on the triple-interaction term suggests that in the post-period, the current period's earnings are a better predictor of next period's cash flows for commercial banks with broker-dealer affiliates than for commercial banks without broker-dealer affiliates. Columns 1 and 3 report the results before entropy balancing, and columns 2 and 4 present results after entropy balancing. In all columns, year fixed effects are included, and continuous independent variables are standardized to a mean of zero and a standard deviation of one for ease of interpretation. Collectively, these two tests provide additional evidence in support of H1.

Table 6 reports the results for the same versus different auditor tests. Columns 1 and 2 report the results using the same model and control variables as the main specification. Columns 3 and 4 include control variables for relative size and audit expertise. The results show that the positive effect on provision validity is concentrate in banks that engage the same auditors. I interpret this result as evidence that the improved accounting quality at the broker-dealer banks in the post-period is due to an improvement in the audit process. All columns have year fixed effects, and continuous independent variables are standardized to a mean of zero and a standard deviation of one for ease of interpretation.

Table 7 reports the results for the fourth-quarter tests. Columns 1 and 2 report the results of the model used in prior research, and columns 3 and 4 include additional controls for loan-portfolio characteristics. All four columns include indicator variables for each of the first three quarters and interactions between the quarter indicators and the provision, which I omit from the table for brevity. The coefficients on the triple-interaction term are significantly positive in all cases, suggesting an improvement to the provisioning in banks with broker-dealer subsidiaries relative to banks without broker-dealer subsidiaries in the post-period compared to the pre-period in all quarters. However, the coefficient is higher in the fourth quarter, indicating a more significant improvement in the fourth quarter, and a Wald test for coefficient differences indicates the chi-squared is 5.45 (5.73) and significant at the .05 level.

Table 8 reports the results of the tests after considering the prior PCAOB experience. All columns include year fixed effects, and continuous independent variables are standardized to a mean of zero and a standard deviation of one for ease of interpretation.

Columns 1, 3, and 5 report the specification consistent with prior research, and columns 2, 4, and 6 include additional variables related to loan-portfolio composition.

Columns 1 and 2 report the results based on inspection status. For this test, the indicator variable for PCAOB is set to 1 when the audit firm has annual inspections, and 0 when the audit firm has triennial inspections or when no inspections are on file.[21] The positive coefficient on the triple-interaction term suggests that in the post-period when inspections of the audit firm are more frequent, the provision is more highly associated with subsequent charge-offs.

Columns 3 and 4 report the results of the influence of the PCAOB as measured by the registration status. The indicator variable is set to 1 if the audit firm is registered with the PCAOB because they have other public company clients. This suggests the PCAOB has greater influence on the audit firm because of other public company clients which could be inspected through the SOX program. The positively significant coefficient suggests that within the sample of banks with broker-dealer subsidiaries, in the post-period, the association is greater between the provision and subsequent charge-offs when the auditors register with the PCAOB because they have other public company clients. As a caveat, the variation in the registration status is limited for this subsample and the majority of observations, the PCAOB indicator is one.

Columns 5 and 6 report the results using Big 4 auditors as a proxy of PCAOB pressure and experience. The positive and significant coefficient on the interaction term suggests that in the post-period, for banks with broker-dealer subsidiaries that engage Big 4 auditors,

[21] In untabulated results, I exclude the observations for which the audit firm is not inspected and results are unchanged.

the association is greater between the provision and subsequent charge-offs than it is for banks with broker-dealer subsidiaries which engage non-Big 4 auditors. Collectively, the results suggest that when the PCAOB has more influence over the audit firm, the improvement in accounting quality is more significant for the bank after the PCAOB initiates inspections of broker-dealer audits.

Chapter 5: Cross-Sectional Analysis

5.1 Public vs. Private Bank Holding Company

The audits of publicly held BHCs are subject to PCAOB inspection under the issuer program initiated with the passage of Sarbanes-Oxley. Therefore, banks that are publicly held may have already improved their accounting quality in response to PCAOB inspections. If this is the case, the improvement I document is an incremental improvement. The improvement from the broker-dealer program could be more significant than the initial impact of PCAOB inspections due to the separation in timing, heightened scrutiny, and higher inspection risk in the broker-dealer program. Private BHC audits are subject to PCAOB inspection for the first time through the broker-dealer inspection program. In this sample, one third of the BHCs are private. Therefore, to assess the impact of prior exposure to the PCAOB inspection regime through public ownership, I compare publicly and privately owned BHCs within the subsample of BHCs with broker-dealer subsidiaries.

Table 9 presents the results of this cross-sectional analysis. Columns 1 and 2 report the estimates of the seemingly unrelated simultaneous OLS regressions consistent with the main specification, with the cross-sectional split between public and private BHC ownership. Both subsamples show a significantly positive coefficient of interest, the interaction term between the provision and post-period indicator, indicating a more

significant correlation between the provision and subsequent charge-offs in the post-period. A Wald test on the coefficient of interest between the public and private columns shows a significant statistical difference, (chi-square of 2.24). All columns have year fixed effects, standard errors are clustered by bank, and continuous independent variables are standardized to a mean of zero and standard deviation of one for ease of interpretation.

Public ownership and the size of the BHC are highly correlated; therefore, using both the control for size, measured as the natural log of total assets, and size interacted with the provision is appropriate. In columns 3 and 4, I report the results without the interaction term. The results are consistent but less statistically significant for public banks and the difference between the coefficients of interest between public and private banks is more statistically significant, (chi-square of 3.26). In untabulated results, I remove the size control variable in addition to the interaction term. The results are quantitatively and qualitatively similar to those presented in columns 3 and 4 (chi-square of 3.88). Removing the size variables demonstrates that the size variable and the interaction of the provision with the size term are capturing some of the statistical significance in the public/private ownership cross-sectional test.

5.2 Relative Size of Broker-Dealer in the Bank Holding Company

Although the SEC requires an audit opinion for SEC-registered BHCs, the holding company is not an operating entity. Auditors only perform substantive audit procedures on operating entities, which are the commercial bank and broker-dealer subsidiaries. FDICIA requires a separate audit opinion for the commercial bank, and FINRA requires a separate audit opinion for the broker-dealer. The BHC audit opinion references the two audit opinions in the consolidated opinion if they are material to the consolidated entity. The materiality of each entity impacts the level of audit scrutiny. Materiality can also affect the potential for the spillover effect of a regulatory change on one entity to that of the other. Table 10 reports the results of a cross-sectional analysis related to the size of the broker-dealer relative to the commercial bank.

Among the BHCs with broker-dealer subsidiaries, variation exists in the relative importance of the broker-dealer and commercial bank to the overall BHC. For some, the investment banking business is the primary focus, with the commercial bank services secondary, and for others, the reverse is true. I call the former "investment banks," such as Charles Schwab and TD Ameritrade. For these large investment banks, the commercial bank's activities are less material and, therefore, the accounting-quality improvements resulting from changes to the broker-dealer are less substantial.

To assess materiality, the auditors calculate either the proportion of assets or the subsidiary's contribution to revenue. In the broker-dealer industry, revenue is a more common measure than assets because the customers own the assets the broker-dealer invests and sells; therefore, the assets held on the broker-dealer's balance sheet are minimal

compared to the fees and commissions it charges its customers for underwriting and investing services. Therefore, a revenue-based measure of materiality is more appropriate. Because broker-dealer income statements are not publicly available, I use the line items on the BHC's Y-9C that report the income associated with the broker-dealer.[22] To proxy for relative size to the BHC, I scale the broker-dealer income variables by total BHC revenue (noninterest income plus interest income).

In Table 10, columns 1 and 2, report the estimates of simultaneous regressions using seemingly unrelated estimation to compare broker-dealers with relative size above/(below) the mean. The coefficient of interest is the interaction term between the provision and post-period indicator and is negatively insignificant on the subsample above the mean. It is positively significant on those below the mean. These results suggest that improvement in accounting quality at the commercial bank is occurring when the broker-dealer's relative size is below the mean. A Wald test between the coefficients shows the difference is statistically significant (chi-square of 7.48).

In columns 3 and 4, I remove the "investment banks" and identify them as any BHCs with greater than 50% of their revenue generated from investment banking services (11 BHCs). Removing this set of banks is meant to isolate the test to BHCs where either the focus on commercial and investment banking is balanced or the emphasis on commercial banking is greater. Within this subsample, I estimate the regressions on the two subsamples of broker-dealers with relative size above and below the mean. I find the coefficient on

[22] The line items on the Y-9C identified as related to broker-dealer income are: C886 FEES AND COMMISSIONS FROM SECURITIES BROKERAGE and C888 INVESTMENT BANKING, ADVISORY, AND UNDERWRITING FEES AND COMMISSIONS.

the interaction term is positively significant for both banks above and below the mean size of broker-dealer relative size, with higher statistical significance for those above the mean. I use a Wald test to test the difference across the coefficient of interest in the two subsamples, and find it is statistically significant (chi-square of 2.83).

Collectively, I interpret this finding as evidence that no material improvement occurs in the commercial bank's accounting quality when the primary focus of the business is investment banking. This lack of improvement is likely due to the immateriality of the commercial-bank subsidiary relative to the broker-dealer subsidiary. However, when the focus is either commercial banking or both commercial and investment banking, the improvement in accounting quality is more significant when the broker-dealer is a more material operation within the BHC.

5.3 Commercial and Industrial Loans

The main proxy I use for accounting quality is loan-loss provision validity. The loan category for which the most judgment exists, and therefore allows for the most discretion in calculating the loan-loss provision, is commercial and industrial loans (C&I). C&I loans normally have a one-year allowable charge-off period. Therefore, I expect to observe improvement in the annual provision-validity measure for C&I loans. I evaluate this category separately because it more closely fits the proxy of accounting quality; however, data limitations exist because the provision by loan-category data was not available on the Y-9Cs until March 31, 2013. Therefore, I conduct two subsample tests.

First, I evaluate C&I provision validity in the periods for which the allowance by loan type is available on the Y-9Cs and is machine readable for all observations. I use quarterly data to obtain a larger sample size due to the shortened timeframe. Because the data are quarterly, I first convert the income-statement items from year-to-date to one quarter's activity. I add the current and last three quarters' C&I provision to obtain an annualized C&I provision. For charge-offs, I add the next four quarters' C&I charge-offs. I then calculate the change in non-performing loans in the C&I category as a control variable.

Table 11, Panel A, presents the results of the OLS regression with quarterly C&I data in the post-period only. Year fixed effects are included in all columns. Columns 2 and 4 also include additional controls for loan-portfolio characteristics. The results suggest that in the post-period, relative to banks without broker-dealer subsidiaries, banks with broker-dealer subsidiaries have a stronger association between the C&I provision and the subsequent C&I charge-offs.

Although the Y-9C data is available for C&I provision detail only after March 31, 2013, public banks disclose the allocation of the allowance for loan losses by loan type in their 10K footnotes. The footnote disclosure related to the allocation of the allowance for loan losses is a required disclosure; however, the bank can choose which categories to include. Some banks disclose a very high-level allocation, which makes isolating the C&I portion of the allowance difficult. To obtain 10-K footnote data, I examine the public banks with broker-dealer subsidiaries in the sample (69 of 111) for 2004-2012. For 60 of the 69 public banks, the footnote disclosure provides C&I-specific allowance data. To obtain a control sample, I hand-collected the C&I allowance data for the largest 60 banks.

Table 11, Panel B, presents the results of the OLS provision-validity regression using the hand-collected data. The positively significant coefficient on the triple-interaction term suggests the association between the C&I provision and subsequent charge-offs is stronger for banks with broker-dealer subsidiaries in the post-period than for banks without broker-dealer subsidiaries. I interpret the collective results reported in Panels A and B as additional evidence for the hypothesis that the accounting quality improves for these banks.

5.4 Capital Adequacy – Incentive to Manipulate Earnings

Additional earnings management incentives in the banking industry are related to capital-adequacy requirements (Beatty, Chamberlain, & Magliolo, 1995; Collins, Shackelford, & Wahlen, 1995; Moyer, 1990; Kim & Kross, 1998; Altamuro & Beatty , 2010; Ahmed, Thomas, & Takeda, 1999).[23] Although the banks in this study are well capitalized, variation exists in the distance between each bank's Tier 1 capital ratio and the regulatory minimum. As banks get closer to the minimum requirement, they are more likely to manipulate earnings through the provision to remain above the requirement and also to be more comparable to their peers. As banks get closer to the regulatory minimum, they are less likely to respond to auditor and PCAOB inspection pressure in light of their earnings-management pressure. If the audit process improves due to PCAOB pressure, the auditors will require better documentation and support, which makes the estimates more

[23] Prior literature shows that public ownership indicates a greater incentive for earnings manipulation due to additional earnings pressure (Beatty, Ke, & Petroni, 2002). I conduct the analysis on the public/private cross section in section 5.1. The results there could be partially due to incentives to manipulate earnings; however, the interpretation would be similar and is consistent with the tests related to the earnings-manipulation component.

precise. On the other hand, if the estimates are subject to manipulation in the pre-period, the banks with lower capital adequacy may be less likely to make improvements to their estimates. These banks could instead manipulate the additional support and documentation required by the auditors due to PCAOB inspection pressure.

Table 12 reports results of this cross-sectional test with using the Tier 1 capital ratio as a proxy for capital adequacy, an incentive for earnings management. Columns 1 and 2 report the results of simultaneous OLS regressions using seemingly unrelated estimates on the subsamples of banks above/(below) the median (12%) Tier 1 capital ratio. The coefficient on the interaction variable is positively significant for banks with Tier 1 capital ratios above the median. Those below the median report a negative but statistically insignificant coefficient. Using a Wald test to compare the coefficient of interest across the subsamples, I find they are statistically different (chi-square of 3.27). I interpret the results as suggesting an improvement in accounting quality for banks that have higher Tier 1 capital ratios and less incentive to manipulate earnings for capital-adequacy calculations. Improvements to their estimates occur because they respond to changes in the audit process from PCAOB inspection pressure and improve accounting quality.

This result is more pronounced when evaluating banks above and below lower capital ratios. In columns 3 and 4, I report the results of evaluating the subsamples above and below an 11% Tier 1 capital ratio. The BHCs with Tier 1 capital ratios above 11% have a positively significant coefficient on the interaction term, which is statistically different from those below 11% (chi-square of 9.42). In untabulated results, I find the results are

qualitatively similar when I move the percentage downwards; however, very few banks have a Tier 1 capital ratio below 10%.

5.5 Decline in Accounting Quality - Repeal of Glass-Steagall Act in 1999

To determine the effect of a commercial bank's decision to initiate broker-dealer operations, and to further explain the negative coefficient on the interaction term between broker-dealer banks and the provision in the main tests, I conduct additional analysis surrounding the 1999 Gramm-Leach-Bliley Act (GLBA). This act repealed the remaining provisions in Glass-Steagall, allowing commercial banks, investment banks, and insurance companies to merge. In the late 1990s and early 2000s, many banks either established or purchased broker-dealer subsidiaries in response to the regulatory change and as a way to diversify revenue streams. Although the finance literature documents increased profitability and risk-taking by banks because of this regulatory change, existing research has not addressed the issue of accounting quality at the commercial bank.

To address the impact of GLBA on commercial-bank accounting quality, I examine the BHCs with broker-dealer subsidiaries and use the FFIEC database to determine the origination of the broker-dealer subsidiary. I then use the SNL database on mergers and acquisitions and obtain data for all banks that acquired broker-dealer subsidiaries. Next, I compare banks that did not enter the broker-dealer market with those that did four years before and after the passage of GLBA in 1999. I use the same entropy-balancing methodology as in previous tests to account for the selection bias. Table 13 presents the results, which suggest a decline in accounting quality, measured by the validity of the loan-

loss provision, for banks that entered the broker-dealer market relative to those that did not after the passage of GLBA.

Chapter 6: Robustness Checks

6.1 Inverse Probability-Weighted Sample

As an alternative to entropy balancing, I use inverse probability weighting to address the issue of selection bias.[24] Similar to entropy balancing, this method weights observations based on observable factors. First, I fit a probability model and obtain a prediction for each observation in the data. Then, I use the inverse of the probabilities to weight the control observations, that is, the banks without broker-dealers. For example, based on asset size, the broker-dealer banks are larger than non-broker-dealer banks. In this example, the larger banks without broker-dealer subsidiaries (the control group) receive a greater weight in the regression to more closely match the broker-dealer banks (the treatment group).[25]

Similar to entropy balancing, the inverse probability-weighting method addresses selection bias without losing observations. In probability weighting, the researcher first estimates the probability weights with logistic regression and then computes balance

[24] Inverse probability weighting is also called propensity-score weighting when the probabilities are combined into a propensity score.

[25] I also include an augmented estimator, which adds a bias-correction term to the probability estimator, allowing for correction in the probability estimator if it is misspecified. If the treatment model is correctly specified, the bias-correction term is zero, but if the treatment model is misspecified, this term will correct the estimator for that bias.

checks to determine if the weights equalize the covariate distribution (Hainemueller, 2012). This back-testing and potential reassignment is suboptimal to entropy balancing when a finite sample exists. Entropy balancing includes the desired balance in the original weighting. Also, in contrast to probability weighting, entropy balancing allows for the weighting to address differences in multiple moments of the data. Another potential downside of inverse probability weighting compared to entropy balancing is that any error in the estimation has a denominator effect in the weighting. This denominator effect could assign higher weights to somewhat dissimilar control observations. For these reasons, I use entropy balancing in the main specification. However, because probability weighting is widely used in the literature and offers many of the same advantages as entropy balancing, I estimate the regressions with the probability-weighted sample as a robustness test.

Table 14 presents the results of the inverse probability-weighting analysis. Panel A reports the probability model fit to the data. I estimate the probability model on both the BHC sample for the provision-validity tests and on the commercial-bank sample (CBANK sample) for the earnings-persistence and cash-flow-predictability tests. I then apply the inverse of the Pr(BDBANK) for each variable to weight each control observation in the OLS regression analysis in Panels B and C.

Panel B reports the results of the provision-validity tests using an inverse-probability-weighted sample. The interaction term between the provision and the post indicator for banks without broker-dealers is negative and insignificant, indicating no statistical improvement in provision validity in the post-period for banks without broker-dealer

subsidiaries. The interaction term between the provision and the post indicator is significantly positive for banks with broker-dealer subsidiaries, indicating an improvement in provision validity. The difference between the coefficients across the two groups is statistically significant at the .01 level.

Panel C reports the results of the earnings-persistence and cash-flow-predictability tests using the inverse-probability-weighted sample. In each test, the interaction between ROA and the post indicator is more significant for banks with broker-dealer subsidiaries than for banks without broker-dealer subsidiaries. The difference in the coefficients across the groups is statistically significant at the .01 level. Collectively, the results indicate improved overall accounting quality at banks with broker-dealers relative to banks without broker-dealers from the pre-period to the post-period using the inverse-probability-weighted sample.

6.2 Asset Size in Sample Adjustments

To mitigate concerns that the size cutoffs in the sample selection may be driving the results, I perform robustness tests with differing size-threshold cutoffs. The size cutoff in my main specification is less than $500 billion and greater than $500 million in assets. This cutoff allows for common support in the sample without losing treatment observations. However, I also evaluate the main specification with upper-bound size cutoffs at $250B and $100B, which are commonly used thresholds in banking regulatory requirements, and a lower-bound size cutoff at $1B, which is the current FDICIA bank audit requirement. The results are tabulated in Table 15, and columns 2, 4, and 6 perform the test on the

entropy-balanced sample. The results are quantitatively and qualitatively similar to the main specification.

6.3 Time-Period Adjustments

In all the tests, I use a difference-in-differences design with year fixed effects to address issues related to time trends, but loan-portfolio composition may change from year to year in reaction to other events. In Table 16, the regressions are estimated using alternative periods to alleviate concerns that the results are related to the period selected for the study. First, in columns 1 and 2, I remove observations during the financial crisis, eliminating fiscal years 2007, 2008, and 2009. The pre-period includes years 2005-2006 and 2010-2011. The post-period includes 2012-2016. Although eliminating a subsumed period when using lagged variables is not ideal, using this period helps address the concern that the results are attributable to a crisis effect. Second, in columns 3 and 4, I eliminate the earliest years in the sample to provide an even number of years around the post-period indicator. The pre-period includes 2007 to 2011 and the post-period includes 2012 to 2016. The drawback of this choice alternative sample period is that the financial crisis dominates the pre-period. Last, in columns 5 and 6, I eliminate the years surrounding the implementation of Dodd-Frank to address concerns that the banks with broker-dealers may have been reacting to other provisions in Dodd-Frank, such as the Volcker Rule, or that the banks with broker-dealer subsidiaries reacted sooner to the PCAOB inspection change as it was being discussed and passed. In this specification, the pre-period is 2005-2008, and the post-period is 2012-2016. In all cases, the results are quantitatively and qualitatively

similar to the main results, suggesting the period I use in the main specification is not driving the results.

Chapter 7: Conclusion

I provide evidence that initiating PCAOB oversight of the broker-dealer industry improves the accounting quality at the affiliated commercial bank when the entities have shared BHC ownership. I measure improvement in accounting quality using loan-loss provision validity, earnings persistence, and cash-flow predictability. I also provide evidence this improvement is related to the audit process. The results are robust to added control variables, alternative measures of financial reporting quality, inverse probability weighting, alternative size thresholds, and time-period adjustments. I provide evidence of an unexplored benefit, namely, improved accounting quality at banks that operate broker-dealer subsidiaries. This evidence should inform regulators as they evaluate the PCAOB broker-dealer inspection program.

The spillover effect in this setting is important due to the significance of high-quality accounting in the prudential regulation of the banking system. Effective regulation of banks requires accurate and timely information from accounting outputs used in regulatory reporting. The objective of bank regulation is to provide "safety and soundness" in the banking industry, which has implications for the stability of the market as a whole because banks are the backup liquidity source for all other institutions (Federal Reserve, 1982).

Concerns regarding conflicts of interests and fiduciary responsibilities associated with lending depositors' money have led to a debate about diversifying services provided by banks. This study is informative to that debate because it provides evidence that the additional regulation aimed at the broker-dealer subsidiary has a positive impact on the commercial bank.

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Appendix A: Tables and Figures

Table 1: Descriptive Statistics

Panel A - Bank Holding Company Sample

Variable	N	Mean	Std Dev	25th Pctl	Median	75th Pctl
Regression Variables						
$CHGO_{t1}$	8,998	0.530	0.739	0.106	0.252	0.618
LLP	8,998	0.482	0.713	0.092	0.225	0.548
POST	8,998	0.393	0.489	0.000	0.000	1.000
BDBANK	8,998	0.111	0.315	0.000	0.000	0.000
ΔNPL	8,998	0.673	2.297	-0.271	0.013	0.632
SIZE	8,998	7.502	1.225	6.647	7.109	7.913
ΔLOANS	8,998	0.080	0.152	-0.004	0.063	0.132
HETERLOANS	8,998	0.315	0.171	0.188	0.296	0.415
TIER1	8,998	0.131	0.045	0.105	0.123	0.147

Panel B - Within Broker-Dealer Bank Sample

Variable	N	Mean	Std Dev	25th Pctl	Median	75th Pctl
INSP_STATUS	1,169	0.831	0.375	1.000	1.000	1.000
REG_STATUS	1,169	0.982	0.133	1.000	1.000	1.000
BANKBIG4	1,169	0.808	0.394	1.000	1.000	1.000
SAME	1,169	0.745	0.436	0.000	1.000	1.000
CHGOt1	1,169	0.499	0.665	0.123	0.267	0.559
LLP	1,169	0.424	0.661	0.080	0.183	0.438
ΔNPL	1,169	0.366	1.382	-0.212	0.000	0.423
SIZE	1,169	9.641	1.705	8.346	9.674	11.140
ΔLOANS	1,169	0.087	0.167	0.005	0.061	0.131
TIER1	1,169	0.138	0.057	0.107	0.122	0.147
HETERLOANS	1,169	0.355	0.177	0.224	0.368	0.463
RELSIZE	1,169	0.143	0.386	0.027	0.060	0.992
PUBLIC	1,169	0.663	0.473	0.000	1.000	1.000

Table 1 – continued from previous page

Panel C- Commercial Bank Sample

Variable	N	Mean	Std Dev	25th Pctl	Median	75th Pctl
Regression Variables						
ROA	11,933	0.009	0.011	0.006	0.009	0.013
EBLLP	11,933	0.014	0.012	0.009	0.012	0.016
POST	11,933	0.496	0.500	0.000	0.000	1.000
BDBANK	11,933	0.087	0.281	0.000	0.000	0.000
SIZE	11,933	7.293	1.141	6.498	6.887	7.663

Table 2 - Entropy Balancing Statistics

Panel A – Bank Holding Company Sample

Without weighting

	BDBANKS			NONBDBANKS		
Variables	mean	variance	skewness	mean	variance	skewness
SIZE	9.39	2.94	0.01	7.25	0.78	1.57
ROA	0.01	0.00	-1.43	0.01	0.00	-1.74
PUBLIC	0.66	0.22	-0.70	0.44	0.25	0.23
TIER1	0.14	0.00	2.00	0.13	0.00	1.86
HETERLOANS	0.35	0.03	0.11	0.31	0.03	0.71
LIQUIDITY	0.86	0.06	0.38	0.87	0.03	0.17
LEVERAGE	0.89	0.00	-1.23	0.91	0.00	-1.03
AGE	34.06	200.80	0.55	27.64	143.50	1.97
GEOGRAPHIC	6.15	11.50	0.21	6.86	10.58	-0.13
BANKSUBS	2.24	11.56	6.07	1.45	3.52	13.84
COMPLEXITY	3.18	7.62	1.13	2.67	3.81	2.50

After Entropy Balancing - with weighting

	BDBANKS			NONBDBANKS		
Variables	mean	variance	skewness	mean	variance	skewness
SIZE	9.39	2.94	0.01	9.40	2.94	0.01
ROA	0.01	0.00	-1.43	0.01	0.00	-1.43
PUBLIC	0.66	0.22	-0.70	0.66	0.22	-0.70
TIER1	0.14	0.00	2.00	0.14	0.00	2.00
HETERLOANS	0.35	0.03	0.11	0.35	0.03	0.11
LIQUIDITY	0.86	0.06	0.38	0.86	0.06	0.38
LEVERAGE	0.89	0.00	-1.23	0.89	0.00	-1.22
AGE	34.06	200.80	0.55	34.05	200.70	0.56
GEOGRAPHIC	6.15	11.50	0.21	6.15	11.50	0.21
BANKSUBS	2.24	11.56	6.07	2.23	11.55	6.07
COMPLEXITY	3.18	7.62	1.13	3.18	7.61	1.13

Table 2 – continued from previous page

Panel B – Commercial Bank Sample

Without weighting

	BDBANKS			NONBDBANKS		
Variables	mean	variance	skewness	mean	variance	skewness
SIZE	8.63	2.49	0.36	7.09	0.72	1.76
ROA	0.01	0.00	-0.50	0.01	0.00	-1.06
PUBLIC	0.70	0.21	-0.86	0.42	0.24	0.31
TIER1	0.13	0.00	3.12	0.13	0.00	2.79
HETERLOANS	0.38	0.05	0.61	0.31	0.03	1.05
LIQUIDITY	0.86	0.07	0.45	0.86	0.04	0.22
LEVERAGE	0.89	0.00	-1.35	0.90	0.00	-1.53
AGE	33.82	192.40	0.56	27.49	197.60	1.82
GEOGRAPHIC	6.21	11.88	0.21	6.97	10.74	-0.15
BANKSUBS	2.39	13.30	5.64	2.04	13.47	6.14
COMPLEXITY	3.49	7.84	1.01	2.63	3.50	2.57

After Entropy Balancing - with weighting

	BDBANKS			NONBDBANKS		
Variables	mean	variance	skewness	mean	variance	skewness
SIZE	8.63	2.49	0.36	8.62	2.49	0.36
ROA	0.01	0.00	-0.50	0.01	0.00	-0.50
PUBLIC	0.70	0.21	-0.86	0.70	0.21	-0.86
TIER1	0.13	0.00	3.12	0.13	0.00	3.12
HETERLOANS	0.38	0.05	0.61	0.38	0.05	0.61
LIQUIDITY	0.86	0.07	0.45	0.86	0.68	0.45
LEVERAGE	0.89	0.00	-1.35	0.89	0.00	-1.34
AGE	33.82	192.40	0.56	33.81	192.50	0.56
GEOGRAPHIC	6.21	11.88	0.21	6.21	11.88	0.22
BANKSUBS	2.39	13.30	5.64	2.39	13.30	5.64
COMPLEXITY	3.49	7.84	1.01	3.49	7.84	1.01

Table 3 - LLP/Charge-offs Descriptive Statistics

This table provides additional detail on univariate descriptive data on the current period provision and the next period charge offs.

Panel A: Pearson/Spearman Correlations above/(below) the diagonal.

Variable		LLP			$CHGO_{t1}$			
						POST=0	POST=1	Diff
LLP					BD =1	0.831	0.662	-0.168
					BD=0	0.760	0.519	-0.241
		POST=0	POST=1	Diff				
$CHGO_{t1}$	BD=1	0.808	0.855	0.048				
	BD=0	0.701	0.715	0.014				

Panel B: Ratio Analysis- this table reports the sample average of the ratio between the provision and next periods charge offs on the first two lines and average of the distance from 1 for each observational ratio in the next two lines

		POST =0	POST = 1	Diff
Ratio (LLP/Chgo_t1)	BD = 1	1.126	1.073	-0.053
	BD = 0	1.398	1.321	-0.077
Valid (absolute value (ratio-1))	BD = 1	0.798	1.140	0.342
	BD = 0	0.958	1.357	0.399

Table 4 – Loan Loss Provision Validity

This table reports the results of the OLS regressions with BDBANK set to 1 for observations where a bank holding company has a broker-dealer subsidiary and 0 otherwise. Post is an indicator variable set to one for observations in the years greater than or equal to 2012. Columns 1 & 3 report the model used in prior literature, and columns 2 & 4 include additional control variables related to loan portfolio composition. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and a standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.526***	0.522***	0.426***	0.416***
	(0.015)	(0.016)	(0.041)	(0.038)
BDBANK	-0.114***	-0.114***	-0.226*	-0.223*
	(0.025)	(0.025)	(0.133)	(0.128)
POST_BDBANK	0.153***	0.153***	0.382***	0.371***
	(0.038)	(0.039)	(0.139)	(0.137)
LLP_BDBANK	-0.085*	-0.085*	0.069	0.059
	(0.044)	(0.045)	(0.067)	(0.063)
LLP_POST	-0.033	-0.025	-0.118*	-0.104
	(0.046)	(0.046)	(0.065)	(0.067)
LLP_POST_BDBANK	**0.236*** **	**0.237*** **	**0.282*** **	**0.295*** **
	(0.068)	**(0.070)**	**(0.080)**	**(0.080)**
ΔNPL	0.066***	0.067***	0.045	0.040
	(0.008)	(0.008)	(0.027)	(0.040)
SIZE	0.059***	0.061***	0.041***	0.051***
	(0.008)	(0.008)	(0.010)	(0.018)
LLP_SIZE	0.042***	0.042***	0.038*	0.044**
	(0.013)	(0.013)	(0.021)	(0.021)
ΔLOANS		-0.015**		-0.028*
		(0.007)		(0.015)
TIER1		-0.001		-0.004
		(0.011)		(0.021)

Continued on next page

Table 4 – continued from previous page

	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
HETERLOANS		-0.013		-0.047
		(0.008)		(0.042)
Entropy Balanced Sample	N	N	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	8,998	8,998	8,998	8,998
R-squared	0.616	0.617	0.624	0.629

Table 5 – Earnings Persistence and the Predictability of Cash Flows

This table reports the results of the OLS regressions that measure earnings persistence in columns 1 and 2 and predictability of cash flows in columns 3 and 4. The commercial bank sample was used for these tests. ROA is the return on assets and EBLLP is earnings before loan loss provision, a proxy for cash flow. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	ROA_{t1}	ROA_{t1}	$EBLLP_{t1}$	$EBLLP_{t1}$
ROA	0.675***	0.751***	0.571***	0.479***
	(0.018)	(0.042)	(0.033)	(0.078)
BDBANK	0.003***	0.004***	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
ROA_POST	-0.045	-0.233***	0.194***	-0.078
	(0.029)	(0.064)	(0.040)	(0.097)
ROA_BDBANK	-0.090	-0.167**	-0.095	-0.030
	(0.061)	(0.073)	(0.147)	(0.148)
POST_BDBANK	-0.005***	-0.009***	-0.003**	-0.002
	(0.001)	(0.002)	(0.002)	(0.002)
ROA_POST_BDBANK	**0.283*** **	**0.640*** **	**0.271** **	**0.358** **
	(0.083)	**(0.143)**	**(0.123)**	**(0.171)**
SIZE	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_SIZE	0.031*	0.056***	0.027	0.031
	(0.017)	(0.017)	(0.032)	(0.034)
Entropy Balanced	N	Y	N	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	11,933	11,933	11,933	11,933
R-squared	0.471	0.373	0.382	0.277

Table 6 – Same vs. Different Auditors

This table reports the simultaneous OLS regressions comparing the subsample of broker-dealer banks that engage the same auditors to issue the broker-dealer opinion and commercial bank audit opinion compared to banks who engage different audit firms for each opinion. Columns 1 and 2 report the results with the same control variables as in the main specification and columns 3 and 4 include additional control variables for the relative size of the broker-dealer to the commercial bank and the bank auditor type (Big 4 audit firm). All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	SAME AUDITORS	DIFFERENT AUDITORS	SAME AUDITORS	DIFFERENT AUDITORS
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.440***	0.498***	0.442***	0.489***
	(0.041)	(0.093)	(0.042)	(0.086)
POST	0.127**	0.102**	0.135***	0.089*
	(0.059)	(0.052)	(0.055)	(0.064)
LLP_POST	**0.287*** **	**0.044**	**0.285*** **	**0.038**
	(0.106)	**(0.097)**	**(0.106)**	**(0.095)**
ΔNPL	0.076***	0.117	0.087***	0.125*
	(0.027)	(0.097)	(0.028)	(0.093)
SIZE	0.092***	0.109***	0.087***	0.167***
	(0.021)	(0.037)	(0.027)	(0.048)
LLP_SIZE	0.075**	0.122**	0.075**	0.116**
	(0.038)	(0.061)	(0.038)	(0.060)
ΔLOANS	0.061***	-0.062**	0.064***	-0.053*
	(0.025)	(0.037)	(0.026)	(0.037)
TIER1	-0.026**	-0.004	-0.034	0.015
	(0.011)	(0.038)	(0.031)	(0.040)
HETERLOANS	0.026*	0.006	0.024*	0.010
	(0.017)	(0.029)	(0.017)	(0.029)

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Table 6 – continued from previous page

	SAME AUDITORS	DIFFERENT AUDITORS	SAME AUDITORS	DIFFERENT AUDITORS
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
RELSIZE			0.004***	0.003*
			(0.001)	(0.002)
BANKBIG4			0.003	-0.203***
			(0.045)	(0.084)
Wald Test LLP_BDBANK_POST	$\chi^2 = 3.41$*		$\chi^2 = 3.64$**	
Year Fixed Effects	Y	Y	Y	Y
Observations	871	298	871	298

Table 7 – Fourth Quarter Test

This table reports the OLS regressions estimated in the main tests for the first three quarters compared to the fourth quarter, using seemingly unrelated estimation. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	Q4	Q1-3	Q4	Q1-3
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$
LLP	0.742***	0.755***	0.743***	0.751***
	(0.021)	(0.020)	(0.023)	(0.021)
POST	0.001***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
BDBANK	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)
POST_BDBANK	-0.000	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
LLP_POST	-0.107**	-0.096**	-0.105*	-0.096**
	(0.054)	(0.042)	(0.055)	(0.043)
LLP_BDBANK	-0.077	-0.080	-0.077	-0.077
	(0.055)	(0.059)	(0.055)	(0.059)
LLP_BDBANK_POST	0.413***	0.281***	0.402***	0.265***
	(0.094)	(0.089)	(0.096)	(0.090)
ΔNPL	0.001***	0.000***	0.001***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
LLP_SIZE	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
ΔLOANS			0.003	-0.006***
			(0.003)	(0.001)
TIER1			-0.004	-0.004
			(0.005)	(0.005)

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Table 7 – continued from previous page

	Q4	Q1-3	Q4	Q1-3
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$	$CHGO_{Q+1-4}$
HETERLOANS			-0.000	0.000
			(0.001)	(0.001)
Wald Test LLP_BDBANK_POST	$\chi^2 = 5.45$**		$\chi^2 = 5.73$**	
Year Fixed Effects	Y	Y	Y	Y
Observations	8,292	24,101	8,292	24,101

Table 8 – PCAOB Influence

This table reports the results of the OLS regressions that measure the effect of the level of PCAOB scrutiny on the bank's audit firm to the loan loss provision validity. The PCAOB indicator reflects the inspection status of the bank's auditor in columns 1 and 2, registration status in columns 3 and 4 and whether the bank's auditor is a big four firm in columns 5 and 6. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	INSPECTION		REGISTRATION		BANKBIG4	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.505***	0.509***	0.380**	0.360**	0.520***	0.527***
	(0.045)	(0.046)	(0.152)	(0.155)	(0.086)	(0.085)
PCAOB	-0.010	0.005	0.032	0.049	-0.041	-0.034
	(0.041)	(0.041)	(0.074)	(0.077)	(0.042)	(0.043)
POST_PCAOB	0.094*	0.090**	0.398***	0.525***	0.122**	0.124**
	(0.049)	(0.043)	(0.098)	(0.117)	(0.057)	(0.053)
PCAOB_LLP	-0.026	-0.031	0.100	0.120	-0.053	-0.063
	(0.064)	(0.065)	(0.159)	(0.162)	(0.101)	(0.101)
LLP_POST	-0.135*	-0.121*	-0.529***	-0.721***	-0.188	-0.194*
	(0.079)	(0.070)	(0.177)	(0.221)	(0.116)	(0.112)
PCAOB_LLP_POST	**0.311*** **	**0.286*** **	**0.690*** **	**0.873*** **	**0.375*** **	**0.369*** **
	(0.090)	**(0.081)**	**(0.194)**	**(0.229)**	**(0.120)**	**(0.117)**

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Table 8 – continued from previous page

VARIABLES	(1) $CHGO_{t1}$	(2) $CHGO_{t1}$	(3) $CHGO_{t1}$	(4) $CHGO_{t1}$	(5) $CHGO_{t1}$	(6) $CHGO_{t1}$
SIZE	0.090***	0.074***	0.087***	0.074***	0.100***	0.085***
	(0.022)	(0.021)	(0.018)	(0.017)	(0.020)	(0.020)
LLP_SIZE	0.077**	0.076**	0.078**	0.076**	0.086**	0.088**
	(0.036)	(0.035)	(0.032)	(0.031)	(0.042)	(0.041)
ΔLOANS		0.016		0.016		0.016
		(0.017)		(0.017)		(0.017)
TIER1		-0.031**		-0.032**		-0.031**
		(0.014)		(0.014)		(0.014)
HETERLOANS		0.015		0.015		0.014
		(0.014)		(0.014)		(0.014)
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Observations	1,169	1,169	1,169	1,169	1,169	1,169
R-squared	0.747	0.749	0.746	0.748	0.749	0.750

Table 9 – Public vs. Private BHC

This table reports the results of the OLS regressions that measure the effect within the sub-samples of private versus publically owned bank holding companies using seemingly unrelated simultaneous estimation. Columns 1 and 2 report the results with the same variables included as those in the main specifications. Columns 3 and 4 show the results excluding the interaction between LLP and Size. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	Public	Private	Public	Private
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.454***	0.508***	0.518***	0.506***
	(0.047)	(0.049)	(0.052)	(0.057)
POST	0.025	0.068	0.024	0.121*
	(0.024)	(0.054)	(0.027)	(0.073)
LLP_POST	**0.099*** **	**0.185*** **	**0.083***	**0.257*** **
	(0.037)	**(0.044)**	**(0.044)**	**(0.076)**
ΔNPL	0.016	0.079	0.011	0.056
	(0.014)	(0.052)	(0.013)	(0.061)
SIZE	0.082***	0.070**	0.076***	0.073***
	(0.023)	(0.028)	(0.023)	(0.028)
LLP_SIZE	0.088*	0.103***		
	(0.048)	(0.029)		
ΔLOANS	0.020	-0.015	0.029	-0.015
	(0.017)	(0.020)	(0.021)	(0.020)
TIER1	-0.043**	-0.010	-0.043**	-0.005
	(0.017)	(0.014)	(0.017)	(0.014)
HETERLOANS	0.035	-0.009	0.053*	0.017
	(0.023)	(0.018)	(0.030)	(0.019)
Wald Test LLP_POST	$\chi^2 = 2.24$*		$\chi^2 = 3.88$**	
Year Fixed Effects	Y	Y	Y	Y
Observations	775	294	775	294

Table 10 – Relative Size of Broker Dealer in Bank Holding Company

This table reports the results of the OLS regressions results on subsamples of the broker-dealer banks partitioning based on the relative size of the broker-dealer above and below the mean size using seemingly unrelated simultaneous estimation. Columns 1 and 2 report the results of all broker-dealer banks, and columns 3 and 4 exclude the broker-dealer banks where the holding company's primary business is investment banking services. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	All BDbanks		Excluding Investment banks	
	BDsize Above Mean	BDsize Below Mean	BDsize Above Mean	BDsize Below Mean
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.466***	0.490***	0.522***	0.489***
	(0.035)	(0.052)	(0.079)	(0.062)
POST	-0.059	0.056	0.163**	-0.045
	(0.062)	(0.034)	(0.067)	(0.064)
LLP_POST	**-0.033**	**0.171*** **	**0.403*** **	**0.141***
	(0.057)	**(0.053)**	**(0.122)**	**(0.083)**
ΔNPL	0.062***	0.079***	0.089***	0.105***
	(0.023)	(0.021)	(0.021)	(0.038)
SIZE	0.080***	0.080**	0.036	0.113**
	(0.023)	(0.039)	(0.053)	(0.048)
LLP_SIZE	0.045	0.030	0.038	0.033
	(0.028)	(0.020)	(0.035)	(0.033)
ΔLOANS	0.009	0.002	-0.039**	0.007
	(0.013)	(0.022)	(0.017)	(0.023)
TIER1	-0.022*	-0.018	-0.041	-0.014
	(0.012)	(0.021)	(0.027)	(0.021)

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Table 10 – continued from previous page

	All BDbanks		Excluding Investment banks	
	BDsize Above Mean	BDsize Below Mean	BDsize Above Mean	BDsize Below Mean
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
HETERLOANS	-0.023	0.023	0.021	0.005
	(0.023)	(0.018)	(0.019)	(0.033)
Wald Test LLP_POST	$\chi^2 = 7.48$***		$\chi^2 = 2.83$*	
Year Fixed Effects	Y	Y	Y	Y
Observations	233	936	327	609

Table 11 – Commercial and Industrial Loans

This table reports the results of the provision validity tests on the subsample of commercial and industrial loans. Panel A uses the data from the Y9-C bank holding company reports that are available beginning 12/31/13 and therefore captures the post-period only. Panel B has both pre-and post-period with the subsample of banks who reported the information in their 10K footnote. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

Panel A – Post period only

	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
$LLP_{C\&I}$	0.901***	0.775***	1.670***	1.496***
	(0.273)	(0.257)	(0.189)	(0.180)
BDBANK	-0.002***	-0.001**	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
$LLP_{C\&I}$_BDBANK	**0.133***	**0.115***	**0.151*****	**0.146****
	(0.070)	**(0.069)**	**(0.057)**	**(0.058)**
ΔNPL	-0.000***	-0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	0.001***	0.001***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
$LLP_{C\&I}$_SIZE	-0.120***	-0.106***	-0.204***	-0.186***
	(0.036)	(0.033)	(0.021)	(0.020)
TIER1		0.006		0.005
		(0.007)		(0.007)
$\Delta LOANS_{C\&I}$		-0.003***		-0.002**
		(0.001)		(0.001)
Entropy Balanced Sample	N	N	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	5,116	5,116	5,116	5,116
R-squared	0.083	0.083	0.527	0.536

Panel B – Hand Collected Sub-Sample

VARIABLES	(1) $CHGO_{C\&I\_t1}$	(2) $CHGO_{C\&I\_t1}$	(3) $CHGO_{C\&I\_t1}$	(4) $CHGO_{C\&I\_t1}$
$LLP_{C\&I}$	0.220**	0.201**	0.215	0.211
	(0.084)	(0.084)	(0.135)	(0.134)
BDBANK	0.032	0.028	0.020	0.021
	(0.046)	(0.045)	(0.047)	(0.047)
$BDBANK\_LLP_{C\&I}$	-0.251**	-0.240**	-0.231*	-0.233*
	(0.112)	(0.111)	(0.121)	(0.119)
POST_BDBANK	-0.029	-0.011	0.018	0.017
	(0.051)	(0.051)	(0.054)	(0.055)
$POST\_LLP_{C\&I}$	-0.380***	-0.407***	-0.486***	-0.483***
	(0.101)	(0.105)	(0.124)	(0.126)
$POST\_BDBANK\_LLP_{C\&I}$	**0.271****	**0.277****	**0.328****	**0.321****
	(0.128)	**(0.135)**	**(0.153)**	**(0.156)**
$\Delta NPL_{C\&I}$	0.024***	0.029***	0.013	0.014
	(0.009)	(0.010)	(0.009)	(0.009)
SIZE	0.377***	0.378***	0.391***	0.386***
	(0.054)	(0.056)	(0.059)	(0.060)
$SIZE\_LLP_{C\&I}$	0.323***	0.326***	0.309***	0.312***
	(0.035)	(0.037)	(0.046)	(0.045)
$\Delta CHGLOANS_{C\&I}$		-0.034***		-0.032***
		(0.009)		(0.011)
TIER1		-0.018		-0.012
		(0.011)		(0.013)
Entropy Balanced Sample	N	N	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	1,151	1,151	1,151	1,151
R-squared	0.804	0.797	0.770	0.771

Table 12 – Incentives to Manipulate Earnings - Capital Adequacy

This table reports the results of the seemingly unrelated simultaneous estimation of regressions on subsamples of the broker-dealer banks partitioned based on their Tier 1 capital ratio as a proxy for an incentive to manipulate earnings. Columns 1 and 2 report the results on the sample partitioned above and below the sample median Tier 1 ratio, 12%, and columns 3 and 4 above and below 11%. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	Tier1 > 12%	Tier1 < 12%	Tier1 > 11%	Tier 1 < 11%
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.428***	0.571***	0.441***	0.575***
	(0.063)	(0.043)	(0.054)	(0.044)
POST	0.010	0.031	0.041	-0.053
	(0.073)	(0.034)	(0.050)	(0.062)
LLP_POST	**0.210*** **	**0.050**	**0.202*** **	**-0.181**
	(0.066)	**(0.053)**	**(0.064)**	**(0.114)**
ΔNPL	0.033	0.039	0.017	0.057**
	(0.021)	(0.024)	(0.015)	(0.029)
SIZE	0.079***	0.068***	0.073***	0.069***
	(0.025)	(0.014)	(0.020)	(0.014)
LLP_SIZE	0.103**	0.042	0.104***	0.022
	(0.043)	(0.030)	(0.036)	(0.037)
ΔLOANS	-0.016	0.021	-0.003	0.012
	(0.014)	(0.018)	(0.014)	(0.020)
TIER1	-0.002	0.029	0.002	0.018
	(0.017)	(0.024)	(0.015)	(0.025)
HETERLOANS	0.428***	0.571***	0.441***	0.575***
	(0.063)	(0.043)	(0.054)	(0.044)
Wald Test LLP_POST	$\chi^2 = 2.85$*		$\chi^2 = 9.42$***	
Year Fixed Effects	Y	Y	Y	Y
Observations	585	584	831	338

Table 13 – Glass Steagall Repeal 1999 Test

This table reports the results of the OLS regressions that test the effect of the repeal of the Glass-Steagall Act in 1999. The POST indicator is set to one in years after 1999 and BDbank is set to one if the commercial bank acquired or established a broker dealer subsidiary. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.252***	0.249***	0.217***	0.201***
	(0.011)	(0.018)	(0.038)	(0.039)
BDBANK	0.017	0.019	-0.060	-0.055
	(0.020)	(0.019)	(0.074)	(0.066)
POST_BDBANK	-0.043**	-0.036**	0.029	0.026
	(0.017)	(0.015)	(0.074)	(0.070)
LLP_BDBANK	0.003	0.013	0.027	0.029
	(0.025)	(0.035)	(0.046)	(0.047)
LLP_POST	-0.016	-0.016	0.026	0.035
	(0.011)	(0.016)	(0.046)	(0.044)
LLP_POST_BDBANK	**-0.060*** **	**-0.061*** **	**-0.106** **	**-0.108** **
	(0.018)	**(0.022)**	**(0.050)**	**(0.046)**
ΔNPL	0.003	0.004	0.013*	0.002
	(0.003)	(0.003)	(0.008)	(0.009)
SIZE	0.043***	0.034***	0.053***	0.052***
	(0.004)	(0.004)	(0.014)	(0.013)
LLP_SIZE	0.029***	0.028***	0.036***	0.038***
	(0.005)	(0.009)	(0.008)	(0.008)
ΔLOANS		-0.007*		0.047
		(0.004)		(0.030)
TIER1		0.001		0.005
		(0.004)		(0.009)
HETERLOANS		0.012***		0.012
		(0.004)		(0.010)
Entropy Balanced Sample	N	N	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	11,359	11,359	11,359	11,359
R-squared	0.536	0.478	0.658	0.673

Table 14 – Alternative Method for Selection Issue

This table reports the alternative method for addressing the differences between broker dealer banks and non-broker dealer banks, an inverse probability weighted sample. Panel A reports the results of the probability model for the samples used in the first stage of this method. Panel B and C report the results of the main tests with the inverse probability weighting applied. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

Panel A – Probability Model

	BHC Sample	CBANK Sample
	(1)	(2)
VARIABLES	Pr(BD Bank)	Pr(BD Bank)
SIZE	0.651***	0.522***
	(0.058)	(0.057)
ROA	0.744	0.365
	(4.329)	(1.799)
PUBLIC	-0.030	-0.015
	(0.152)	(0.151)
LEVERAGE	-0.400	-0.577*
	(2.671)	(0.303)
LIQUIDITY	-0.736**	-0.546
	(0.374)	(2.415)
AGE	0.004	0.493
	(0.006)	(0.379)
BANKSUBS	0.020	0.003
	(0.018)	(0.004)
GEOGRAPHIC	-0.041*	0.013
	(0.022)	(0.013)
COMPLEXITY	0.070**	0.096***
	(0.028)	(0.026)
TIER1	2.883	-0.039*
	(2.032)	(0.020)
HETERLOANS	0.042	-4.831*
	(0.437)	(2.502)
# of Observations	8,998	11,933

Panel B – LLP tests with Inverse Probability Weighting

	NonBDBank	BDBank	NonBDBank	BDBank
	(1)	(2)	(3)	(4)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.522***	0.412***	0.517***	0.412***
	(0.015)	(0.062)	(0.017)	(0.062)
POST	-0.009	0.039	-0.017	0.053
	(0.026)	(0.038)	(0.025)	(0.036)
LLP_POST	**-0.011**	**0.160*** **	**-0.003**	**0.157*** **
	(0.047)	**(0.051)**	**(0.046)**	**(0.053)**
ΔNPL	0.066***	0.054**	0.067***	0.052**
	(0.009)	(0.026)	(0.009)	(0.026)
SIZE	0.057***	0.063***	0.062***	0.058***
	(0.010)	(0.013)	(0.010)	(0.013)
LLP_SIZE	0.033**	0.069***	0.034**	0.068***
	(0.014)	(0.024)	(0.015)	(0.023)
ΔLOANS			-0.019**	0.003
			(0.007)	(0.013)
TIER1			0.007	-0.019**
			(0.013)	(0.009)
HETERLOANS			-0.020**	0.009
			(0.009)	(0.014)
Wald Test LLP_POST	$\chi^2 = 10.12$***		$\chi^2 = 8.63$**	
Year Fixed Effects	Y	Y	Y	Y
Observations	7999	999	7999	999

Panel C – Earning Persistence and Predictability of Cash Flows with Inverse Probability Weighting

	NonBDBank	BDBank	NonBDBank	BDBank
	(1)	(2)	(3)	(4)
VARIABLES	ROA_{t1}	ROA_{t1}	$EBLLP_{t1}$	$EBLLP_{t1}$
ROA	0.671***	0.569***	0.473***	0.459***
	(0.020)	(0.059)	(0.025)	(0.059)
POST	0.001	-0.006***	-0.003***	-0.004*
	(0.000)	(0.002)	(0.001)	(0.002)
ROA_POST	**-0.106*** **	**0.423*** **	**0.123*** **	**0.273** **
	(0.038)	**(0.130)**	**(0.047)**	**(0.116)**
SIZE	-0.000	-0.000	0.001***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_SIZE	-0.000**	-0.001	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)
ROA	0.671***	0.569***	0.473***	0.459***
Wald Test ROA_POST	$\chi^2 = 18.29$***		$\chi^2 = 12.51$***	
Year Fixed Effects	Y	Y	Y	Y
Observations	11,081	852	11,081	852

Table 15 – Alternative Asset Thresholds for the Sample

This table reports the results of sensitivity tests surrounding the asset size threshold of the sample of the main specification. Columns 1-2 lower the upper bound in the sample to observations with assets less than or equal to $250 billion, columns 3 and 4 less than $100 billion and columns 5 and 6 greater than $1 billion. All continuous independent variables are winsorized at the 1st and 99th percentiles and standardized to a mean zero and standard deviation of one. Robust standard errors are clustered by bank and are provided in parentheses below the coefficient. Significance at the .10, .05, and .01 level for two-sided tests is denoted by *, **, and ***, respectively.

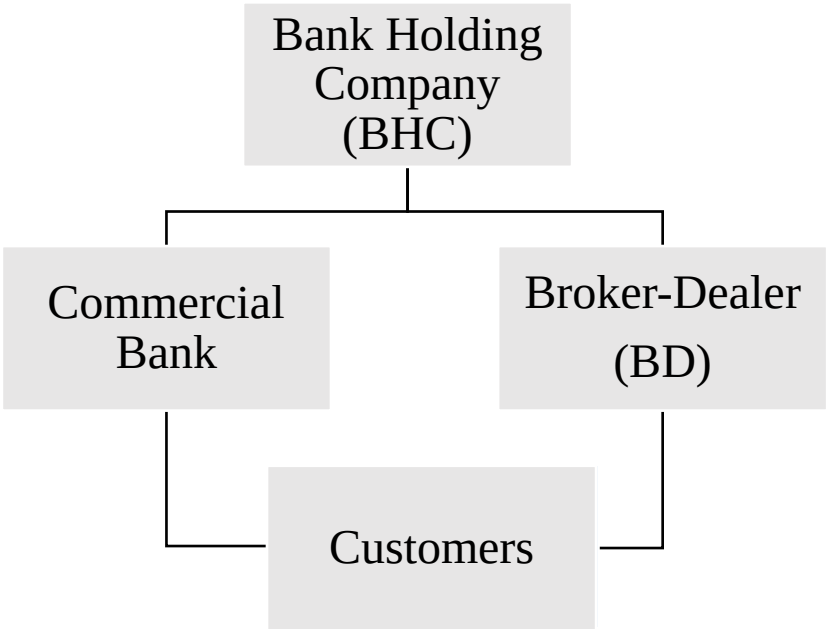
Asset Threshold	**<= $250 B**		**<= $100 B**		**>= $1B**	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.521***	0.417***	0.519***	0.424***	0.513***	0.427***
	(0.016)	(0.038)	(0.016)	(0.035)	(0.024)	(0.039)
BDBANK	0.113***	-0.225*	0.117***	-0.238*	0.123***	-0.223*
	(0.025)	(0.130)	(0.025)	(0.125)	(0.030)	(0.135)
POST_BDBANK	0.148***	0.371***	0.114**	0.373***	0.168***	0.391***
	(0.046)	(0.141)	(0.045)	(0.143)	(0.042)	(0.146)
LLP_BDBANK	-0.088*	0.057	-0.087*	0.050	-0.063	0.098
	(0.046)	(0.063)	(0.045)	(0.064)	(0.046)	(0.062)
LLP_POST	-0.024	-0.105	-0.023	-0.137**	-0.018	-0.121
	(0.046)	(0.067)	(0.047)	(0.065)	(0.057)	(0.076)
LLP_POST_BDBANK	**0.230*** **	**0.289*** **	**0.127***	**0.224** **	**0.211*** **	**0.307*** **
	(0.085)	**(0.098)**	**(0.090)**	**(0.104)**	**(0.076)**	**(0.088)**
ΔNPL	0.067***	0.039	0.068***	0.038	0.082***	0.035
	(0.008)	(0.040)	(0.008)	(0.043)	(0.013)	(0.042)
SIZE	0.062***	0.051***	0.060***	0.041**	0.058***	0.045**
	(0.008)	(0.018)	(0.009)	(0.019)	(0.011)	(0.019)
LLP_SIZE	0.040***	0.039*	0.034**	0.028	0.046***	0.030
	(0.013)	(0.023)	(0.014)	(0.024)	(0.018)	(0.021)
ΔLOANS	-0.015**	-0.031**	0.018***	-0.037**	-0.008	-0.025*
	(0.007)	(0.015)	(0.007)	(0.015)	(0.008)	(0.015)
TIER1	-0.001	-0.003	0.000	-0.002	0.006	0.000
	(0.011)	(0.021)	(0.011)	(0.021)	(0.015)	(0.023)
HETERLOANS	-0.014*	-0.050	-0.016**	-0.067	-0.005	-0.049
	(0.008)	(0.042)	(0.008)	(0.048)	(0.010)	(0.043)
Entropy Balanced	N	Y	N	Y	N	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Observations	8,950	8,950	8,817	8,817	5,409	5,409
R-squared	0.614	0.615	0.608	0.588	0.647	0.647

Table 16 – Alternative Time Periods

This table reports the results of sensitivity tests on the period chosen for the main specification. Columns 1-2 do not include the financial crisis, eliminating fiscal years 2007, 2008, and 2009. Columns 3 and 4 eliminate the earliest years in the sample to provide a balanced number of years around the post period indicator. Columns 5 and 6 remove the years surrounding the implementation of Dodd-Frank, 2009, 2010, 2011.

Time Period	**No Crisis**		**2007-2016**		**No DF Impl**	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$	$CHGO_{t1}$
LLP	0.472***	0.299***	0.509***	0.337***	0.725***	0.925***
	(0.025)	(0.039)	(0.015)	(0.050)	(0.023)	(0.176)
BDBANK	-0.059*	-0.021	0.140***	-0.439**	0.161***	-0.404*
	(0.032)	(0.028)	(0.028)	(0.220)	(0.038)	(0.222)
POST_BDBANK	0.110***	0.128***	0.181***	0.597***	0.168***	0.531**
	(0.041)	(0.046)	(0.041)	(0.227)	(0.042)	(0.225)
LLP_BDBANK	-0.048	0.060	-0.077*	0.162**	0.240***	-0.344*
	(0.070)	(0.057)	(0.047)	(0.082)	(0.085)	(0.178)
LLP_POST	0.021	0.006	-0.012	-0.033	0.231***	0.620***
	(0.044)	(0.061)	(0.048)	(0.074)	(0.055)	(0.182)
LLP_POST_BDBANK	**0.180****	**0.180****	**0.229*****	**0.234*****	**0.323*****	**0.656*****
	(0.080)	**(0.088)**	**(0.071)**	**(0.087)**	**(0.087)**	**(0.185)**
ΔNPL	0.013*	0.027***	0.087***	0.106***	0.063***	0.025
	(0.007)	(0.006)	(0.011)	(0.030)	(0.009)	(0.044)
SIZE	0.047***	0.038***	0.060***	0.061***	0.074***	0.072***
	(0.009)	(0.010)	(0.009)	(0.022)	(0.010)	(0.021)
LLP_SIZE	0.047**	0.077***	0.043***	0.035*	0.071***	0.066**
	(0.019)	(0.021)	(0.012)	(0.021)	(0.020)	(0.027)
ΔLOANS	0.017***	-0.016	-0.015**	-0.040**	0.019***	-0.037**
	(0.006)	(0.010)	(0.008)	(0.017)	(0.007)	(0.014)
TIER1	-0.000	0.023***	-0.004	-0.003	0.003	0.011
	(0.011)	(0.006)	(0.011)	(0.021)	(0.009)	(0.027)
HETERLOANS	0.024***	0.028***	-0.016*	-0.074	0.021***	-0.071
	(0.008)	(0.008)	(0.009)	(0.059)	(0.007)	(0.045)
Entropy Balanced	N	Y	N	Y	N	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Observations	6,635	6,635	7,449	7,449	6,546	6,546
R-squared	0.584	0.684	0.617	0.636	0.657	0.672

Figure 1: Basic Organizational Structure



Figures 1 and 2 assist in the understanding of the setting of this study. Figure 1 shows a simple chart outlining the relationship between the bank holding company (BHC), the commercial bank, and the broker-dealer and their customers when the subsidiaries have shared ownership.

The BHC is the level at which the data is gathered from the Y9-Cs for the BHC sample used for the provision validity tests. The primary reason for using the BHC data is this is the level at which the audit firm, SEC status, complexity, geographic region, and other identifying data is available. As 90% of the BHCs in the sample have only one commercial bank subsidiary, and the outcome variable for these tests is provision validity (a commercial bank-specific outcome variable), it is appropriate to conclude that the improvement documented is attributable to the commercial bank. For 8% of the remaining banks, they have one significant commercial bank and only one smaller commercial bank. Two percent have over two, but in each case, there is one dominant commercial bank and relatively insignificant additional commercial banks. However, the vast majority of banks either upon inception or when engaging in mergers and acquisitions will consolidate the commercial bank activities into one entity for reporting and regulatory purposes.

The commercial bank is the level at which the Call report data is obtained and used for the earnings persistence and cash flow predictability tests. I use this data for these tests as

not to confound the outcome variables with broker-dealer operations. For the variables at the BHC level only, I use the Call Report variable that identifies the BHC to link the commercial bank to its holding company.

The broker-dealer is the level at which the PCAOB inspection program began in 2012 and provides the shock to the audit quality..

Figure 2: Iberiabank's Organizational Structure

Figure 2 provides a specific example: Iberiabank. Often if the commercial bank requires an audit and constitutes a significant portion of the holding company, the audit opinion is provided at the holding company level and the commercial bank audit requirement documentation refers to the holding company audit opinion. The statutory trusts are held by the bank for a specific customer and are audited at the request of that customer on a contract basis. The trusts might consolidate depending on the ownership of the trust, and often these do not consolidate for reporting.

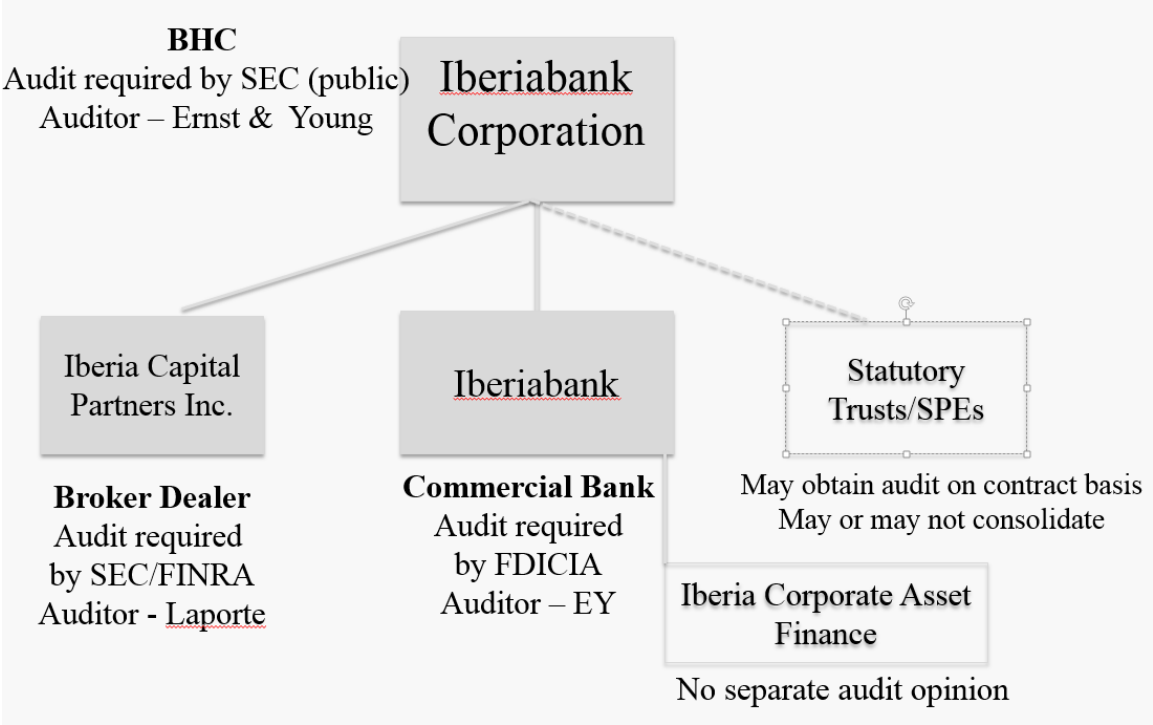


Figure 3 – Parallel Trends Assumption

The difference-in-differences research design assumes that outcomes for the treatment and control group follow parallel trends absent treatment. While this assumption is fundamentally untestable, the graph below provides some support that this assumption is reasonable in this setting. This graph reports the estimates of the coefficient of interest in the main regression by year for banks with broker-dealer subsidiaries (BDbanks) and banks without broker-dealer subsidiaries (nonBDbanks) separately based on the equation below:

$$CHGOFF_{t+1} = \alpha + \beta_1 LLP_t + \beta_2 \Delta NPL_t + \beta_3 SIZE_t + \beta_4 SIZE*LLP_t + \beta_5 Loan\ Portfolio\ Controls_t + \varepsilon_t$$

The graph shows the coefficient of interest, β_1 and suggests that prior to 2012 the banks with and without broker-dealer subsidiaries were following a similar trend. The exception is in 2007 and 2008 during the financial crisis. In the additional analysis section, I remove these years and the results are unchanged. The line at 2012 separates the pre-period from the post-period.

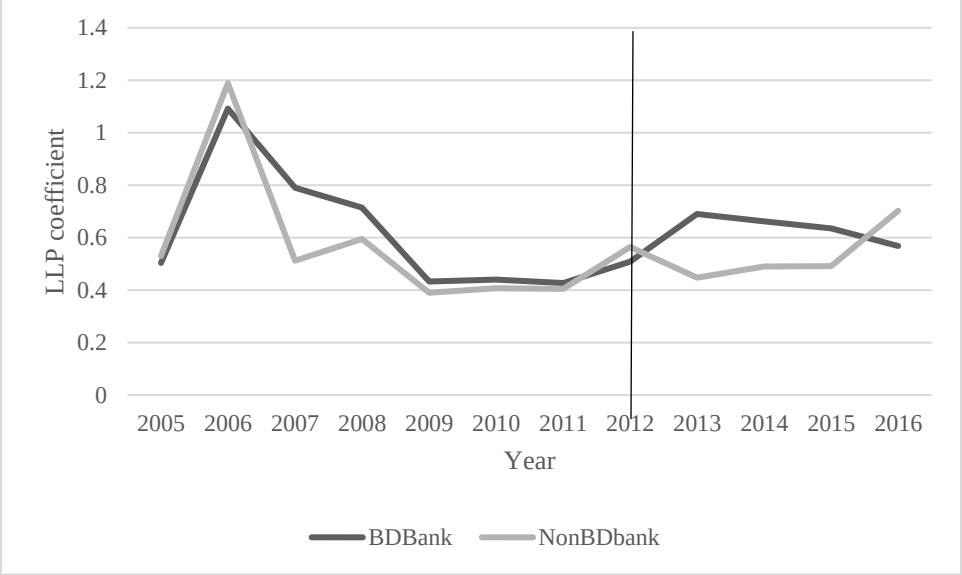
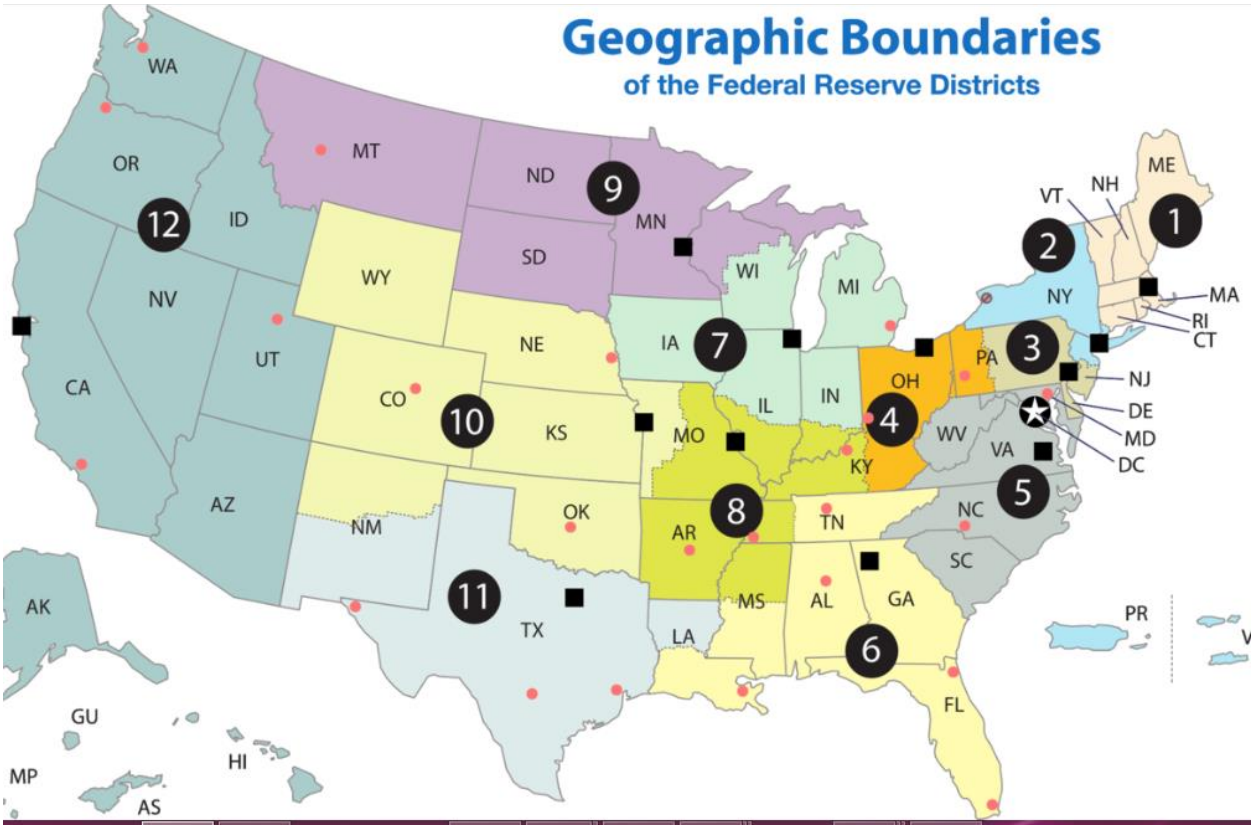


Figure 4: Geographic Regions



Appendix B – Variable Descriptions

Panel A: All Variables

All continuous independent variables have been standardized to mean zero and standard deviation of one for ease of interpretation of the coefficients.

Variable	Description
ASSETS	Total assets of the bank
AGE	Number of years the bank has been operating
BANKBIG4	Indicator Variable set to one if the bank has a big 4 auditor (Deloitte and Touch, Ernst & Young, PWC, or KPMG)
BANKSUBS	A count of the US banking subsidiaries in the organizational structure of the bank holding company during the date range as reported in the Y9-C
BDBANK	Indicator Variable set to one if the bank has a broker-dealer subsidiary
CHGO	Loan loss charge offs scaled by beginning assets
COMPLEXITY	A complexity indicator set by the regulators – see Panel B for more detail
ΔLOANS	Change in total loans/beginning loans
ΔNPL	Change in non-performing loans scaled by beginning non-performing loans
EBLLP	Earnings before loan loss provision scaled by beginning assets
GEOGRAPHIC	The Federal Reserve region under which the BHC is supervised. See Figure 4 for details.
HETERLOANS	Heterogeneous loans = (1 - consumer loans + loans and revolvers secured by 1-4 family property) scaled by beginning loans
INSP Status	PCAOB inspection status. An indicator variable set to one if the bank's auditor is inspected annually, and 0 if triennially, or if no inspection report is on file.
LIQUIDITY	Loans/deposits
LEVERAGE	Liabilities/assets
LLP	Loan loss provision scaled by total beginning assets
NPL	Non-performing loans

PCAOB	An indicator variable one of three: Reg status, Insp status, or BankBig4

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Variable	Description
POST	Indicator variable set to one if the year is greater than or equal to 2012
PUBLIC	An indicator variable set to one if the bank is registered with the SEC and 0 otherwise
Q1, 2, 3, 4	Indicator variable set to one for the corresponding quarter from which the observation was taken.
REG Status	PCAOB registration status. An indicator variable set to one if the bank's auditor is registered with public company clients
RELSIZE	(Fees and commissions from securities brokerage + investment banking, advisory and underwriting fees and commissions) scaled by (noninterest income + interest income)
ROA	Return on assets measured by net income scaled by beginning assets
SAME	Indicator variable set to one if the bank and broker-dealer engage the same audit firm and 0 if they engage different audit firms
SIZE	Natural log of total assets in millions
TIER1	Tier 1 capital / risk weighted assets

Panel B: Complexity Measure Data Description (per the Federal Reserve):

An indicator of whether a U.S. domiciled bank holding company is a complex or a noncomplex organization. For small bank holding companies with total consolidated assets of $5 billion or less, after 20020101 must use values 3 - 8 for complex institutions. A value of 2 should be used for any size company to indicate noncomplex institutions, unless factors indicate complexity and that have been overridden by supervisory judgment, in which case a value of 9 should be used.

0 = Not applicable (not a BHC)

1 = Complex institutions with material credit-extending activities either of the parent bank holding company or its nonbank subsidiaries or debt outstanding to the general public.

2 = Noncomplex. Bank holding companies without debt outstanding to the public, and that do not engage in significant nonbank activities. A nonbank activity could be considered significant based on the scope or type of activity. For example, credit extending activities and investment and trading activities where the holding company acts as a principal would generally be considered significant. The provision of services on a fee basis such as the provision of data processing services to affiliated and/or unaffiliated banks or the sale of instruments on an agency basis may also, in certain instances, be considered significant, depending on the scale of the activity or other factors that may pose direct or indirect risk to the holding company or any insured depository institution subsidiary.

3 = Complex: Nonbank Financial Factors. Nature and scale of nonbank activities warrant designation as complex for supervisory purposes.

4 = Complex: High Risk Activities. Company engages, either directly or through its subsidiaries, in significant non-banking activity having an inherently high risk profile. Examples include securities broker/dealer activities, insurance underwriting, and merchant banking; other activities may also trigger this designation if identified by the supervisory Reserve Bank as high-risk.

5 = Complex: Public Debt. Company issues significant debt to the general public so unsophisticated investors may be at risk of loss.

6 = Complex: Management Factors. Management practices such as the nature of inter-company transactions or centralized risk management policies and procedures warrant designation as complex for supervisory purposes.

7 = Complex: Multiple Factors. Company meets two or more criteria for the complex designation, more than one of which are material in the judgment of the supervisory Reserve Bank. While the intensity of the supervisory approach may not differ from other complex companies, this designation alerts examiners to more than one factor.

8 = Complex: Supervisory Judgment. Company does not appear to be complex as described in SR 02-01, however, at the discretion of the supervisory Reserve Bank, it is designated a complex organization for supervisory purposes.

9 = Noncomplex: Supervisory Judgment. Company appears to be complex as described in SR 02-01, however, at the discretion of the supervisory Reserve Bank, it is designated a noncomplex organization for supervisory purposes.