Auditor Size, Partner-Specialization, and Private Company Audit Adjustments: Insights from the Broker-Dealer Industry

by

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Table of Contents

Auditor Size, Partner-Specialization, and Private Company Audit Adjustments: Insights from the Broker-Dealer Industry

Abstract

This study examines whether auditor size and partner-specialization predict audit adjustments when privately-owned broker-dealers (BDs) change audit firms. Private company auditors have relatively low incentives to compete on quality because managers may select the auditor without involving an audit committee, and these audits present relatively lower reputation and litigation risks compared to public companies. Though I predict that larger firms will provide higher audit quality in this environment, it is unclear whether partner-specialists' will use their BD domain-knowledge to provide higher audit quality where the market does not demand it. Analyses reveal that BDs that change to a larger (smaller) auditor are more (less) likely to record material audit adjustments. BDs that change to a specialist partner, however, are less likely to record material audit adjustments; partners from BD audit firms with no issuer clients drive this effect. Using a subsample with available fee and hour data shows that the auditor size improvements to audit quality correspond with increases to fees and hours, but also incremental to hours. Conversely, partner-specialists employ fewer audit hours than non-specialists. Collectively, these results show that smaller firms, especially the partner-specialists within those firms, are willing to tolerate a higher risk of material misstatement than larger firms will accept when the demand for audit quality is low.

CHAPTER ONE
Introduction

Auditors plan and perform an audit to obtain reasonable assurance that the financial statements are free of material misstatement. When an auditor detects a material misstatement and management corrects the financial statements before communicating to external users, the audit function improves financial reporting. Therefore, an audit adjustment provides a strong audit quality signal. In this study, I test whether auditor size and partner-specialization predict audit adjustments and then examine these associations through their relationship with audit fees and hours. Similar analysis has been difficult to perform because information on audit partners, effort, or recorded audit adjustments are limited to certain countries (Caramanis and Lennox 2008; Lennox, Wang, and Wu 2018; Lennox, Wu, and Zhang 2014, 2016), audit firms (Joe, Wright, and Wright 2011; Johnstone and Bedard 2010), and non-public access (Aobdia 2017; Choudhary, Merkley, and Schipper 2017; Aobdia, Siddiqui, and Vinelli 2017). As this study unites these typically elusive measures, it provides a test of audit quality that aids understanding of audit and financial reporting outcomes that affect users.

In the U.S. broker-dealer (BD) industry, I identify a setting where companies must submit timely, non-public reports to a regulator before later submitting audited reports. I obtain these reports through a combination of public *Audit Analytics* data and non-public access to regulator data. I identify material differences between these pre-audit and audited reports to infer the auditor's role in improving BD financial reporting, and I access non-public partner identification, audit fee, and hour data for a sub-sample of BD audits. As there are nearly four thousand privately owned BDs, I use this dataset to test auditor size and partner-specialization hypotheses in an environment where managers can directly select their auditor without involving an audit

committee. This, along with reduced litigation and reputation risks, creates a setting where BD auditors are more likely to compete on cost than on quality.

Before stating theory, results, and contributions, it is critical to note that, for my purposes, an audit adjustment can only exist when management misstates pre-audit net capital and that the decision to correct any misstatement ultimately lies with management. I adjust the research design to control for acts beyond the auditors' control. First, structuring analysis around auditor changes and controlling for predecessor-identified audit adjustments serves to balance management's time-invariant propensity to misstate across the predecessor and successor auditors. Second, I use only material adjustments because an auditor who allows management to report a known material misstatement without qualifying the opinion is not providing high audit quality, regardless of prior effectiveness.

Public company audit research generally concludes that larger audit firms, and industry-specialists, provide higher quality audits across a spectrum of audit quality measures (see Defond and Zhang 2014, for review). Audit theory suggests that large audit firms do better because they serve to proxy for both incentives and competency to deliver a higher quality audit (see Defond and Zhang 2014, for review). Because audits of privately-owned BDs face reduced reputation and litigation risks, the public company auditor size research may not generalize. For example, private companies and their auditors do not face exposure to class-action lawsuits from uncovered misstatements that correspond with unfavorable stock price movements. Although BD audit quality incentives are reduced, auditor size theory maintains that larger firms develop greater competency to provide high audit quality. For example, economies of scale facilitate investment in quality control systems that benefit all audits in larger firms (Banker, Chang, and

Cunningham 2003). Consistent with the greater competency argument, I find BDs that change to a larger (smaller) auditor are more (less) likely to record a material audit adjustment.

The public company auditing literature generally finds that firm, office, and partner specialization improve audit quality (e.g., Chin and Chi 2009; Dunn and Mayhew 2004; Ittonen, Johnstone, and Myllymäki 2014; Knechel, Naiker, and Pacheco 2007; Reichelt and Wang 2010). As the BD industry is regulated, features a dedicated AICPA Accounting Guide, and even has its own PCAOB attestation standards, specialization should differentiate auditors. Although theory predicts industry-specialization creates knowledge that facilitates better audits (Bédard 1989; Bonner 1990; Bonner and Walker 1994; Solomon, Sheilds, and Whittington 1999; Thibodeau 2003), it is unclear whether this would occur when the market neither demands nor rewards audit quality. For example, Aobdia et al. (2017) show no evidence that U.S. partner-specialists outperform their peers when partner identities are not publicly revealed. They argue that public anonymity reduces reputational incentives to differentiate on audit quality. Furthermore, Bedard, Cannon, and Schnader (2017a) examine BD auditor reporting of internal control disclosures and observe some evidence that control attestation is worse for small specialist audit firms than other small firms. My tests show BDs that change to partner-specialists are less likely to record material audit adjustments and that specialists in audit firms with no issuer clients drive this result.

I then examine the auditor size and partner-specialization tests in relation to fees and hours and thereby improve understanding of the tests through related audit compensation and effort. My model predicts that each percent increase in audit fees corresponds with a 0.8% increase in audit hours, and BDs that change to an auditor that increases audit hours at the 90th percentile have a 25.3 percent likelihood of recording an audit adjustment versus 10.9 percent likelihood

for BDs that change to an auditor that cuts audit hours at the 10th percentile. While intuitive, showing that higher fees lead to higher audit hours and ultimately higher audit quality illuminates the difference between the auditor size and partner-specialization findings.

BDs that change to larger audit firms can expect to pay higher fees to an auditor that works still more hours than the relationship with fees would predict. This suggests that the cost structure in the larger firms allows a greater increase in audit hours even after controlling for the change in fees, potentially through use of low-level staff. Next, BDs that change to larger audit firms are more likely to correct material misstatements than the relationship with audit hours would predict. Enhanced auditor independence and resources that improve the effectiveness of audit effort (e.g., quality control systems, firm-knowledge), may explain these results.

On the contrary, BDs that change to partner-specialists pay roughly equivalent fees to an auditor who works fewer hours, but the BD does not increase the likelihood of correcting misstatements incremental to the cut in audit hours. Because BDs that change to partner-specialists are less likely to record material audit adjustments and specialists in audit firms with no issuer clients drive this result, the relationship with hours suggests that specialist partners in small audit firms cut effort beyond the point of maintaining comparable audit quality.

This study contributes to the existing literature across several dimensions. First, this study advances the auditor size literature for private companies. Though supported by strong theoretical and empirical support, the auditor size literature provides little evidence of the specific mechanisms by which large audit firms provide higher quality (Defond and Zhang 2014). Caramanis and Lennox (2008) show that audit effort reduces earnings management in Greece, and the effect is greater for Big N firms. I replicate these findings in U.S. BDs and extend the study by demonstrating the expected positive association between audit hours and

fees. I also show that auditor size improves audit quality incremental to effort, which may reflect enhanced auditor independence, firm resources that improve the effectiveness of audit effort (e.g., quality control systems, firm-knowledge resources), a combination of these possibilities, or some other explanation. In this way, I perform the first direct study of auditor characteristics that improve financial reporting for any privately owned U.S. companies and, in so doing, evaluate hundreds of small audit firms previously absent from the literature.

I contribute an analysis of partner-specialization under different incentives than the auditing literature. This study provides evidence that partners who specialize in low-risk audits with clients who do not consistently demand audit quality respond to the setting, cut audit effort, and under-perform relative to non-specialists. Compared to public company audits, many partners from small firms specialize in the BD industry. In their review of the private company auditing literature, Vanstraelen and Schelleman (2017) suggest that audit quality is more sensitive to the "competence, judgment and integrity" of individual auditors in smaller audit firms as quality control systems are likely less sophisticated. This study provides evidence that the individual has a greater effect as, in this case, partner-specialists in smaller firms provide lower audit quality.

This study develops the first audit adjustment dataset for privately-owned companies spanning hundreds of audit firms in the U.S. This provides a useful audit quality measure that detects auditor restraint of biased reporting or unintentional errors alike without suffering the infrequency of restatements. Along these lines, I am the first to use an auditor change design for an audit adjustment study. This design reduces susceptibility to management reporting quality and also facilitates a useful contrast of the successor and predecessor auditors. Because audit adjustments increase when switching from smaller auditors, I conclude that smaller auditors allow higher levels of uncorrected misstatements. To support this conclusion, I assume some

base rate of naturally occurring material misstatements and some rate of misstatements that recur when left uncorrected. In this way, I estimate that the clients of firms who audit no issuers materially misstate between 4.49 and 12.72 percent of their audited financials.[1] Conversely, only 1.2 percent of these BDs restate their audited financials.

Finally, as the SEC and Financial Industry Regulatory Authority (FINRA) use audited BD reports to inform their regulatory oversight, my study suggests that regulators can place greater reliance on the BD reports audited by larger audit firms, relative to smaller firms. Furthermore, the PCAOB can use my approach to perform disaggregated analysis that identifies audit firms and partner-specialists who do not appear to be detecting misstatements that their client corrects.

In Chapter Two I summarize the BD industry and describe academic theory underlying my hypotheses. I describe my research design in Chapter Three and present results in Chapter Four. I detail limitations, thoughts for future research, and conclude in Chapter Five.

[1] These estimates are computed using a 90 percent confidence interval that compares the 0.1688 rate of adjustments on recurring engagements (n=7,797) to the 0.2548 rate of adjustments when the BD changes to a firm that also audits issuers (n=310). This estimate is conservative because 1) not all uncorrected misstatements recur (e.g., because I use audit adjustments to net capital, a prior year income misstatement would correct itself); 2) the new auditor does not detect all misstatements; and 3) Table 4 shows that BDs who select larger auditors have a lower propensity to misstate and, therefore, those that change to larger audit firm are likely among the smaller audit firm's better clients. This last point makes it difficult to use this same approach to estimate misstatements for larger firms.

CHAPTER TWO
Background and Hypothesis Development

Broker-Dealer Industry Background

As brokers execute trades for others and dealers execute trades for their own accounts, the BD industry is responsible for all securities trades in the U.S. This, and related custodial responsibilities for investors' assets, puts the BD industry in a key role in society and the capital markets. Given this key role, generally all BDs, public or private, must register with the Securities and Exchange Commission (SEC) and generally all registered BDs must file a publicly-accessible audited annual report. The BD industry includes hundreds of audit firms, publicly-owned companies, and thousands of privately-owned companies.

While Bernie Madoff operated a Ponzi scheme defrauding investors of over ten billion dollars, Friehling and Horowitz LLP signed over a decade of unqualified opinions for his BD. The Ponzi scheme collapsed in 2008, and in 2010 Dodd-Frank legislation charged the PCAOB with public oversight of all BD audits (U.S. Congress 2010). This legislation made BD audits the only private company audits subject to PCAOB oversight. This, and the SEC requirement for all BDs to release audited annual reports under one set of accounting principles and auditing standards, provides a unique ability to study audits of privately-held companies in the U.S.[2]

The audit mandate and regulatory oversight differentiate BDs from other private company audits. First, the SEC mandates that BDs report audited financial statements, and I assume that some portion of private BDs hire an auditor solely to meet the requirement. I expect BDs that do

[2] For a more detailed description of the industry, standards, and changes, refer to Bedard, Cannon, and Schnader (2014) and Kowaleski, Cannon, Schnader, and Bedard (2017). Bedard et al. describe historical industry standards for BD reporting and auditor attestation up through the proposed SEC amendments to those standards. Kowaleski et al. update this analysis through the first round of PCAOB inspections under the amended rules that were implemented in 2014.

not perceive a net benefit from verification services will pursue the cheapest audit possible. This differentiates mandated BD from voluntary private company audits. Second, PCAOB oversight reduces audit quality variation; Defond and Lennox (2011) find that, following SOX, low quality auditors leave the public company audit market rather than register with the PCAOB. Bedard, Cannon, and Schnader (2017b) find similar behavior for auditors of BDs. These studies suggest that registered audit firms provide higher quality than size-matched, non-registered firms.

Detected Misstatements and Associated Audit Adjustments

Audit adjustments serve to proxy for audit quality following DeAngelo's (1981) definition, the joint propensity to detect and correct financial misstatements. The private nature of these adjustments limits their use in the audit quality literature. In spite of this challenge, researchers have found creative ways to identify audit adjustments. Using SAB 108 disclosures, Keune and Johnstone (2012, 2015) identify proposed audit adjustments and analyze the audit firm and public company characteristics that predict whether management chooses to record or waive. Choudhary et al. (2017) use proprietary PCAOB data collected from inspected-engagements to study predictors for detecting audit adjustments and the consequences of the decision to record or waive. While these studies examine resolution of detected misstatements to study the antecedents and consequences of materiality judgments, Lennox et al. (2016) use a proprietary dataset of recorded audit adjustments in China to show that companies who record audit adjustments have better earnings quality. Lennox et al. (2014) use the same dataset to show that mandatory audit partner rotation improves audit quality. I use audit adjustments as an audit quality proxy following Lennox et al. (2014). As audit adjustments are sensitive to management's propensity to misstate pre-audit financials, Lennox et al. (2014) design their study around the timing of the exogenously applied mandatory partner rotation rule. Similarly, I design my study of auditor

characteristics and inputs around BDs that change auditors. I discuss related endogeneity concerns in the "Research Design" section.

Auditor Size

Incentives

In their audit research review, Defond and Zhang (2014) report that larger auditors face greater reputation-, litigation-, and regulation-risks that incentivize audit firms to monitor audit quality. They note that "litigation risk exposes auditors to financial penalties…reputation risk impairs the ability to attract and retain clients…regulation risk is the threat of regulatory intervention, which subjects auditors to sanctions that include fines and criminal penalties." These risks increase with audit firm size as "their larger client base subjects them to greater reputation risk and less pressure to succumb to an individual client, and because their 'deep pockets' subject them to higher litigation risk." Furthermore, as "regulatory sanctions are likely to damage the auditor's reputation", risk increases with firm size. Though present, each risk is mitigated in the BD industry.

Before discussing each risk, I note that regulators are the primary user of the audited reports (e.g., FINRA and SEC). I support this claim by observing that BDs can obtain confidential treatment for the bulk of the audited report, including the net capital calculation. This characteristic alters the litigation and reputation risks an auditor faces relative to the risks on public company audits as I will now describe. I first address reputation risk. Experimental and archival studies show that an auditor's report has more value, as measured by investor underpricing, when the auditor has a strong reputation (Balvers, McDonald, and Miller 1988; Chaney and Philipich 2002; Mayhew 2001), thus incentivizing public companies to hire high quality audit firms. As primary users, BD regulators do not select auditors and have limited

ability to vary manager incentives to purchase a high quality audit.[3] This, combined with the absence of fully public reports and analyst conference calls, reduces the likelihood of detecting and publicly communicating audit failure, and thereby reduces exposure to reputation risk in the BD industry. Finally, I address the potential for regulatory risk to damage a firm's reputation. The PCAOB issuer inspection program releases firm-specific reports, but the PCAOB interim inspection program aggregates BD inspection findings in a manner that cannot be attributed to any one firm and thereby reduces reputation risk spillover.

I now address litigation risk. Private BD auditors are not exposed to class-action lawsuits resulting from uncovered misstatements and unfavorable stock price movements. Additionally, as the full reports are not publicly observable, aggrieved counterparties cannot widely claim reliance on audited reports in pursuit of damages. Finally, the Securities Investor Protection Corporation (SIPC) placates the primary stakeholder in BD bankruptcy proceedings as it insures each customer for up to $500,000. Collectively, these traits restrain litigation activity and mitigate deep pocket theory for large BD auditors.

Competence

In addition to greater incentives, auditor size theory maintains that larger firms are able to develop greater competency to provide high audit quality. Watts and Zimmerman (1983) argue that larger firms spread the cost of monitoring audit-quality more broadly across the full firm. This economy of scale allows greater investment in quality control systems such as internal inspections and audit plans. Furthermore, Dopuch and Simunic (1982) argue that larger firms attract higher quality human resources. Both traits promote greater competence for all audits in larger firms. A large archival literature studies industry-specialization that provides auditor

[3] Privately-owned-BD managers are allowed to directly select their auditor without involving an audit committee.

competence variation within a firm and thereby separates its effect from auditor incentives. I discuss this potential effect for my second hypothesis.

Auditor Size for Private Company Audits

Extant private company audit research has not consistently shown improving audit quality corresponds with greater auditor size. While studies from Spain and Norway find a positive Big N effect on audit quality as measured by earnings management, discretionary accruals, and conditional conservatism (Arnedo Ajona et al. 2008; Cano-Rodríguez 2010; Che, Hope, and Langli 2016), Belgian studies do not show a Big N effect (Gaeremynck, Van Der Meulen, and Willekins 2008; Vander Bauwhede and Willekins 2004). Van Tendeloo and Vanstraelen (2008) work to reconcile these findings by showing Big N firms constrain earnings management more than non-Big N firms, but only in EU countries where tax authorities are more likely to detect audit failure. The Van Tendeloo and Vanstraelen finding suggests the Big N effect on private companies is sensitive to incentives (e.g., litigation, reputation, and regulation risk); had they detected the Big N effect in all examined countries, the results may have demonstrated the sufficiency of greater competence. Although extant literature provides no comparisons for audit failure detection risk in other U.S. private company audits, I expect that regulator oversight exposes BD audits to a higher risk of audit failure detection and, therefore, incentivizes large audit firms to perform better audits.

Existing Evidence for BD Audits

Existing evidence suggests that auditor size is positively associated with audit quality for all BDs, including those that are publicly-owned. First, the PCAOB reports that audit firms with (no) issuer clients receive inspection findings on 76 (96) percent of inspected engagements and

on 28 (49) percent of in-scope areas (PCAOB [2016]).[4] As firm size is correlated with auditing issuers, this suggests that larger firms also perform more compliant BD audits. Yet private company audit partners would argue that compliance does not make an audit high quality (Brivot, Roussy, and Mayer 2017); instead, a quality audit requires tailored judgment that gives their client a better understanding of their financial situation. With audit adjustments, my study uses a dependent variable that better aligns with the private company audit partner's definition of audit quality. Second, Bedard et al. (2017a) examine BD auditor reporting of internal control disclosures and related severity judgments and observe that control attestation is better for larger firms. Interestingly, they observe some evidence that control attestation is worse for small specialist firms than other small firms. As control attestation competency is atypical for private firms, my study uses an audit quality measure that generalizes more broadly to other U.S. private company audits. Based on this discussion, I expect changing to a larger audit firm to be associated with higher audit quality.

> *H1: BDs that change to larger (smaller) auditors are more (less) likely to record material audit adjustments.*

Partner-Specialization

Experiments show that industry-specialization develops domain-specific knowledge through repetition of similar tasks (Solomon et al. 1999; Thibodeau 2003) and domain-specific knowledge is associated with improved auditor judgment (Bédard 1989; Bonner 1990; Bonner and Walker 1994). Firm and office-level archival evidence shows similar results across a variety of audit quality measures (Dunn and Mayhew 2004; Knechel et al. 2007; Reichelt and Wang 2010). A growing literature studies partner-specialization and shows similar findings as partner-specialization is associated with improved audit quality (Chin and Chi 2009; Ittonen et al. 2014).

[4] Unlike the issuer inspection program, the PCAOB does not issue firm-specific inspection reports for BD audits.

The ability to observe differences suggests that industry-specialization is not fixed across individuals within an audit firm consistent with Chin and Chi (2011).

Industry-specialization is more common in regulated industries (Danos and Eichenseher 1982; Hogan and Jeter 1999). To identify an industry where specialization has the potential to be beneficial, Bills, Jeter, and Stein (2015) identify industries with a dedicated AICPA audit and accounting guide to reflect accounting complexity. As the BD industry is regulated and has a dedicated AICPA guide, and also its own PCAOB attestation standards, BD partner-specialists should differentiate on audit quality. Yet, it is unclear whether partner-specialists seek to improve audit quality where the market does not demand it. For example, Aobdia et al. (2017) show no evidence that U.S. partner-specialists outperform their non-specialist peers in a setting where partner identities are not publicly revealed. The authors propose the reduction in partner-level reputational incentives as an explanation. Given this concern and the Bedard et al. (2017a) findings discussed above, I make a non-directional prediction.

> *H2: Conditional on auditor change, BDs that select partner-specialists are more or less likely to record material audit adjustments.*

Auditor Size, Partner-Specialization and Audit Quality: Insights from Fees and Hours

I seek to understand how auditor size and partner-specialization affect audit quality through examination of audit fees and hours. In this way, I provide evidence that describes my H1 and H2 tests. I begin by considering the change in audit fees. Extant literature shows Big N auditors command an audit fee premium from public companies (see Hay, Knechel, and Wong 2006, for meta-analysis). Clatworthy, Makepeace, and Peel (2009) show a similar Big N premium exists in private company audits. Therefore, I predict that changing to a larger auditor is associated with a corresponding increase in audit fees.

> *H3a: BDs that change to larger audit firms pay higher audit fees.*

"Most studies do not address whether higher fees are due to increased effort or risk premia" (Defond and Zhang 2014). As audit hour data is rarely available, few studies show the expected positive association between audit hours with audit fees and those that do reveal limited flexibility.[5] Other studies assume that audit fees and hours are correlated (e.g., Bills et al. 2015; Hogan and Wilkins 2008). Because I use first-year audits, I expect greater audit price and plan alignment and, therefore, I make the intuitive and widely assumed prediction that higher fees purchase more audit hours. Furthermore, because partners contribute a lower percentage of personnel in larger audit firms,[6] I expect that larger audit firms predict a greater increase in audit hours incremental to the increase predicted by more audit fees.

> *H3b: Conditional on changing auditors, more fees predicts more audit hours.*
> *H3c: Conditional on changing auditors, larger auditors increase hours incremental to change in audit fees.*

Because theorists link audit cost to audit quality (e.g., O'Keefe, Simunic, and Stein 1994; Hillegeist 1999) and DeAngelo (1981) defines audit quality as the joint propensity to detect and correct financial misstatements, Caramanis and Lennox (2008) characterize the propensity to detect a misstatement as audit effort. Therefore, I predict that larger increases in audit hours will predict more audit adjustments. Furthermore, Caramanis and Lennox (2008) characterize the probability of correcting the misstatement, once detected, as auditor independence. As DeAngelo (1981) argues that larger firms face greater incentives not to impair their independence, I predict that changing to a larger firm will be associated with more audit adjustments incremental to the increase in audit hours.

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[5] Bell, Landsman, and Shackelford (2001) show that business risk increases the number of actual hours but not the fee per hour. Bedard and Johnstone (2010) provide evidence that planned hours respond more to client risk changes than planned realization rate does, implying price rigidity.

[6] Accounting Today (2015) shows that partners contribute 6.5 percent of staff in the ten largest public accounting firms, but 13.6 percent in the 91st to 100th largest firms.

H3d: Conditional on changing auditors, more audit hours are associated with more audit adjustments.
H3e: BDs that change to larger auditors record more audit adjustments incremental to the change in audit hours.

Partner-specialization

Industry-specialization is associated with the ability to charge an audit fee premium at the firm, office, and partner level (Aobdia et al. 2017; Ferguson, Francis, and Stokes 2003; Goodwin and Wu 2014; Zerni 2012). On the contrary, Bills et al. (2015) show that specialists generate efficiencies that accrue to the client in the form of lower audit fees. It is unclear why BDs with limited demand for audit quality would pay a partner-specialist premium. Therefore, I make a non-directional prediction.

H3f: Conditional on changing auditors, partner-specialists affect the change in audit fees.

The Bills et al. (2015) argument referenced above assumes that auditors in their sample work more efficiently, investing fewer hours to support the fee discount. Therefore, I predict that partner-specialists work fewer hours relative to the fees they charge. Furthermore, I expect a partner-specialist to provide more quality with less effort. Therefore, I predict that partner-specialists are associated with more audit adjustments relative to the hours they incur. Refer to Figure 1 panel C in the Research Design section for an illustration of all H3 hypotheses.

H3g: Conditional on changing auditors, partner-specialists work less hours than the change in audit fees would predict.
H3h: Conditional on changing auditors, BDs that select partner-specialists record more audit adjustments than the change in audit hours would predict.

CHAPTER THREE
Research Design

Data

In Table 1, I reference all yearly reports spanning 2010 through 2015 from the *Audit Analytics* BD database.[7] Audit Analytics collects company, financial statement, and audit report data from the SEC's EDGAR database. When BDs omit required forms or disclosures from their SEC submission, BDs either refile that form or the full report. As the SEC often posts these re-submissions in separate EDGAR files, *Audit Analytics* documents each filing separately. From 27,119 observations, I first identify and remove these incomplete filings as follows.

Although the SEC allows BDs to request confidential treatment for the full set of financial statements if the BD also files a redacted report for public release, the SEC does not allow any BD to redact the statement of financial condition (balance sheet). Therefore, I assume any observation missing total assets is incomplete and eliminate accordingly.[8] Next, I remove eight observations where the Audit Analytics observation is missing some necessary information and hand-collection reveals the EDGAR record has been deleted or relates to another entity entirely. I then remove 68 observations where the BD reports multiple fiscal year-ends. As the great majority of BDs file on a calendar year-end, I keep the latter of the two observations in the same year.[9] Next, I remove 134 observations that appear to be exact duplicate filings across all balance sheet, audit report, and attestation report variables. For the remaining 1,044 BDs that file

[7] This sample window coincides with my FOCUS and PCAOB data access as described in this section.
[8] If *Audit Analytics* presents total liabilities, I hand-collect total assets or infer the amount from other financial statement data (16 observations).
[9] Results are not sensitive to dropping the latter of the fiscal year-ends.

multiple times in a year, I retain all balance sheet, audit report, and attestation report data as additional variables and use 25,523 BD-year observations.

I merge this population of publicly available data with non-public Financial and Operational Combined Uniform Single Report Part II or IIA (FOCUS) reports as accessed in December 2016. These financial reports include a balance sheet, income statement, and several regulatory calculations.[10] Managers periodically file these unaudited reports throughout the year. I merge the FOCUS data for the period that overlaps with the audited annual report. As FOCUS data are removed from the database when a company terminates operations, and not all BD designated examining authorities shared their data, I am unable to use 754 related *Audit Analytics* observations. I remove a further 1,834 observations that relate to publicly owned BDs.[11] After removing 5,112 records with missing variables from either the year of, or before, the analysis, my sample includes 17,823 BD-year observations covering 3,807 unique BDs and 880 unique audit firms. For H1 tests, I only use observations where the BD changes its audit firm, leaving 1,772 observations from 1,447 unique BDs and 418 audit firms.

For H2 partner-specialization tests, I further limit my sample to BDs who change to an audit firm that the PCAOB selects for inspection in the year of the change.[12] This allows me to group

[10] In the BD industry, the statement of financial condition and the statement of income refer to the balance sheet and income statement, respectively. I refer to the computation of net capital and the computation of reserve requirements as regulatory calculations. Refer to SEC forms X-17A-5 Part II and X-17A-5 Part IIA for details.

[11] Including public BDs does not change the inferences drawn from my tests. Public company auditor changes are too infrequent for cross-sectional analysis.

[12] Annually inspected audit firms submit all BD client information every year. Triennially inspected audit firms under the issuer inspection program submit all BD client information at least every third year. Firms that do not also audit issuers are under no requirement to be inspected on a regular schedule. PCAOB (2016) - "The selection of firms for inspection took into consideration the number of broker or dealer audits performed by the firms, whether they also issued audit reports for issuers, risk characteristics based on previous inspection results, as well as other risk characteristics, to obtain a cross section of firms that perform audit and attestation engagements of brokers and dealers and of the brokers and dealers." I note that cross-section suggests "typical or representative sample of a larger group."

BD audits by signing partner and measure specialization.[13] After dropping 1,208 observations, I am left with 568 observations from 515 unique BDs, 304 audit partners, and 136 audit firms. For each H3 test, I use non-public PCAOB audit hour and fee data. In years when an audit firm is selected for inspection, the PCAOB collects audit fee and hour data for all of the firm's BD engagements.[14] From my H2 sample, I drop observations missing current or previous year fee or hour data. This leaves 246 observations for analysis spanning 235 unique BDs, 164 partners and 73 audit firms. Refer to Figure 1 for hypothesis summaries that use these samples.[15]

Variables and Models

Managers must file the unaudited FOCUS reports within the period ending 17 business days from the closing date (SEA Rule 17a-5(a)(2)). This requirement and timeline also applies for fiscal-year-end periods when, absent an extension, the BD must also file an audited annual report by the 60th calendar day following fiscal year-end. I use these reports to identify pre-audit and audited net capital and set ADJUST equal to one for each BD with a net capital difference of at least five percent.[16] Net capital is the calculated amount of risk and liquidity adjusted ownership equity. Regulators monitor net capital levels to ensure BDs are funded with acceptably safe and liquid assets following SEC Rule 15c3-1. Informal conversations with practitioners support this materiality threshold as similar to benchmarks used by auditors. Refer to Appendix B for greater detail on how I select the pre-audit and audited reports.

I enhance audit quality identification by (1) controlling for a manager's propensity to misstate by structuring research around auditor changes, and (2) using material adjustments.

[13] Unlike public company audits, PCAOB Form AP does not publicly reveal BD partner identities
[14] Unlike U.S. public companies, BDs need not publicly report audit fees.
[15] Though H3 hypotheses resemble mediation analysis, I avoid this term for its potential to imply causation. As I do not randomly assign the auditor, and the BD picks both the audit firm and fees simultaneously, I do not claim to be detecting causal effects.
[16] I set the minimum for an audit adjustment at 5% of the lowest possible level of required net capital ($5,000; $250). Results are not sensitive to this minimum. All variables are summarized in Appendix A.

Although the decision to change auditors is endogenous, this design reduces risk. For example, if managers who misstate more frequently are also more likely to change auditors, I would detect a spurious correlation if those managers seek larger auditors to substitute for their own deficient reporting quality. In this case, a spurious correlation would only be detected if those managers decreased reporting quality in the year of change. Related concerns are further reduced because audit firms manage their risk exposure, and selectively avoid risky BD clients with poor reporting quality (Bedard et al. 2017b; Johnstone and Bedard 2004). Using only material adjustments addresses the concern that a larger audit firm's reputation and relative negotiation power could influence otherwise reluctant BDs to record detected misstatements. This choice effectively removes the influence of manager preferences as an auditor who allows management to report a known material misstatement without qualifying the opinion is not providing high audit quality, regardless of prior effectiveness.[17]

I test H1 by estimating the following logistic regressions on audit adjustments.

(1) $Pr(ADJUST_{it} = 1) = f(\beta_0 + \beta_1 AUD\_SIZE_{it} + \beta_2 \Delta AUD\_SIZE_{it} + \beta_3 LN\_BD\_SIZE_{it} + \beta_4 GROWTH_{it} + \beta_5 ROS_{it} + \beta_6 LEVERAGE_{it} + \beta_7 \Delta LEVERAGE_{it} + \beta_8 NON\_EXEMPT_{it} + \beta_9 \Delta MAJ\_OWN_{it} + \beta_{10} LN\_BUS\_TYPES_{it} + \beta_{11} UNAUD\_CORR_{it} + \beta_{12} PY\_ADJUST_{it} + \beta_n YEAR\ FE) + \varepsilon$

I code AUD_CHANGE as one when Audit Analytics shows a change in auditor and only use observations where AUD_CHANGE = 1.[18] Audit researchers often use Big N to proxy for auditor size (e.g., DeFond, Erkens, and Zhang 2017; Lennox and Pittman 2010; Zang 2012). As the Big N audit only 11 percent of private BDs, and the incentives and competencies that underlie auditor size theory predict audit quality increase monotonically with firm size, I code AUD_SIZE as the number of CPAs working for a firm as reported in the PCAOB's Registration,

[17] In my sample period, every BD audit opinion is coded by *Audit Analytics* as unqualified.
[18] I manually review audit firm mergers, acquisitions, and name changes as described in Appendix C panel A.

Annual and Special Reporting (RASR) database. I calculate the difference between the current AUD_SIZE and the BD's previous auditor as ΔAUD_SIZE. A positive coefficient on β_2 supports H1.

I adapt the Lennox et al. (2014) audit adjustment model. I proxy for BD size by using the natural log of grossed-up revenue from the FOCUS report (LN_BD_SIZE), which is an appropriate proxy for several reasons. First, for many BDs, the client-relationship and related revenue create firm value. In addition, BDs may attempt to minimize firm assets or net capital to improve performance ratios, such as return on assets. Thus, I use revenue to proxy for size. Second, because the SEC allows BDs to redact revenue from public disclosure, using FOCUS data, as opposed to audited reports, increases sample size. Third, the standardized FOCUS report presents both gains and losses across several income streams in the revenue section. I believe this netting effect reduces my size proxy inappropriately because the capacity to generate either large trading losses or gains suggests a larger book of business. Therefore, I apply the uniform decision to gross-up all main revenue lines.[19] I then take the greater of my grossed-up calculation or the firm's reported total revenue to minimize any aggregation issues or omissions in my recalculation.

I code GROWTH as the difference between current and prior year BD_SIZE divided by the prior year; I winsorize at the 95th percentile. I measure profitability (ROS) as pre-audit net income divided by revenue; I winsorize at the 5th and 99th percentile. I measure LEVERAGE as pre-audit liabilities divided by assets. I measure ΔLEVERAGE as the difference between current and prior year LEVERAGE; I winsorize LEVERAGE and ΔLEVERAGE at the 1st and 99th

[19] These include the following lines from either Part II or IIA reports: 3940, 3950, 3952, 3955, 3960, 3970, 3975, 3980, 3985, 3990, and 3995.

percentile.[20] As new ownership could change auditors and also change the rate of management misstatement, I code ΔMAJ_OWN equal to one when the majority owner's interest began during the year as described in Appendix C panel B.

Complicated accounting and operations could increase the probability of misstatement. In general, non-exempt BDs are more complicated than exempt BDs, present greater customer risk, but also tend to be larger and have better controls due to greater FINRA attention.[21] I code NON_EXEMPT as one if the BD does not claim an exemption provision[22] or submits a response for the reserve requirement computation (SEC Rule 15c3-3).[23] I compute the natural log of authorized lines of businesses recorded on FINRA's BrokerCheck as accessed in August 2015 (LN_ BUS_TYPES) to model the BD operation diversity.

Unlike Lennox et al. (2014), I do not include variables that are unique to public companies (e.g., analyst following, board characteristics), nor those that are not publicly reported for private companies (e.g., audit fees). In addition to the NON_EXEMPT control described above, the BD setting offers another useful variable to replace the explanatory power of public company corporate governance; when the BD corrects an unaudited FOCUS report for a non-audit period during the year, I code UNAUD_CORR as one. When the corrected FOCUS filing is submitted within 21 days of the audit report, I recognize the potential for this correction to involve the auditor and code as zero, accordingly.[24] If the BD recorded an adjustment in the prior year, I

[20] The inconsistent winsorizing criteria are determined by the distribution of each variable. Test variable significance is not sensitive to consistently winsorizing at the 1st and 99th percentile or using unadjusted control variables.
[21] Certain BDs engage in business activities that increase compliance requirements under SEC Rule 15c3-3, the Customer Protection Rule. I refer to these Clearing and Carrying BDs as NON_EXEMPT BDs.
[22] i.e., FOCUS Part II lines 4550, 4560, 4570, and 4580 are all false.
[23] i.e., any one of FOCUS Part II lines 4430, 4472, 4490, 4510, or 4520 is non-zero.
[24] 21 days reflects the average midpoint between the initial FOCUS filing and the audit report date used to classify FOCUS corrections as audit adjustment in audit periods when I calculate the midpoint for all observations.

code PY_ADJUST as one. Both UNAUD_CORR and PY_ADJUST control for the company's propensity to both misstate on the 17th business day and subsequently correct the misstatement.

Partner-Specialization

Prior literature uses a range of partner-specialist measures: total number of clients (Ittonen et al. 2015); percentage of total market sales (Chi and Chin 2011), a combination of sales market share and count (Zerni 2012), or percentage of total fees (Aobdia et al. 2017). As these specialization proxies vary the relative importance of repetition (client count) and time spent in the industry (market share) to measure expertise, I develop several proxies that vary the relative weighting of each. On the repetition end of the spectrum, I code SPEC_BDCT as the natural log of BDs audited by a single partner.[25]

For my other measures, I use the selection of engagements that report audit hours to predict hours. I use predicted rather than actual audit hours because actual audit hours affect audit quality (Caramanis and Lennox 2008). Thus, an audit hour specialization measure could be theoretically linked to audit quality. Accordingly, I code SPEC_PRED and SPEC_PRED2 using predicted hours across all BD clients for an audit firm as described in Appendix C panel C. In summary, each measure relies on predicted audit hours for each engagement in a partner's portfolio. Whereas SPEC_PRED, my primary H2 test variable, attempts to balance the relative importance of repetition and time spent in the industry, SPEC_PRED2 increases the relative weight of time spent in the industry. In recognition of the perspective that industry-leaders or some minimum amount of experience is necessary to be a specialist, I also use a dichotomous measure to ensure that my results are not sensitive to using a continuous measure. I code

[25] Prior literature measures specialization one year prior to the measurement of the dependent variables. Because I do not have complete panel data for partner identification, I measure specialization concurrently and maintain sample size.

SPEC95 as one when the partner is in the 95th percentile of SPEC_PRED by partner for that year.[26] I test H2 by adding SPEC_BDCT, SPEC_PRED, SPEC_PRED2, or SPEC95 to model 1 (H2 models are not presented). A positive coefficient on any of these measures suggests that when BDs select partner-specialists, they are more likely to record material audit adjustments, as H2 predicts.[27] [28] I cluster standard errors by audit firm and by partner.[29]

Role of Audit Fees and Hours

I test H3a through H3h by adding SPEC_PRED to model 1. I measure ΔAUD_FEES% and ΔAUD_HOURS% as the difference between current and prior year fees and hours divided by the prior year amount. I use ΔAUD_FEES% as the dependent variable in place of ADJUST for my OLS regressions testing H3a and f as presented in model 2 below. I add ΔAUD_FEES% as a predictor variable and use ΔAUD_HOURS% as the dependent variable for my OLS regressions testing H3b, c, and g as shown in model 3 below. I add ΔAUD_FEES% and ΔAUD_HOURS% as predictor variables and use ADJUST as the dependent variable for my logistic regressions testing H3d, e, and h as shown in model 4 below. I cluster standard errors by audit firm and partner.[30]

(2) $\Delta AUD\_FEES\%_{it}$ (3) $\Delta AUD\_HOURS\%_{it}$ & (4) $Pr(ADJUST_{it} = 1) = \beta_0 + \beta_1 \Delta AUD\_FEES\%_{it}$ (3 & 4 only) $+ \beta_2 \Delta AUD\_HOURS\%_{it}$ (4 only) $+ \beta_3 SPEC\_PRED_{it} + \beta_4 FIRM\_SPEC + \beta_5 LN\_SIZE_{it} + \beta_6 GROWTH_{it} + \beta_7 ROS_{it} + \beta_8 LEVERAGE_{it} +$

[26] Using the 95th percentile of SPEC_PRED compares one third auditor changes with partner identification against the other two-thirds. The average number of BD clients is 18 and the fewest is four.
[27] As I study one industry, my predicted hour measures most closely resembles a market share measure. Because market size varies by year, I test sensitivity to this design choice by dividing my specialist measures by the yearly total and perform untabulated tests that show essentially the same results.
[28] I test H2 on partner-specialists, and not firm-specialists because a measure of firm specialization that accounts for client size is strongly correlated with AUD_SIZE (r = .9469). As a result, regression results are sensitive to measurement and model specification. Using partner specialists greatly reduces this challenge.
[29] Because less than ten percent of BDs change auditors and appear in the sample twice, I do not control for multiple observations by BD in my main tests. Instead, I test sensitivity by dropping either the earlier or the later observation and observe essentially the same results as my main test under both approaches.
[30] Because less than ten percent of BDs change auditors and appear in the sample twice, I do not control for multiple observations by BD in my main tests. Instead, I test sensitivity by dropping either the earlier or the later observation and observe essentially the same results under both approaches.

$\beta_9\Delta LEVERAGE_{it} + \beta_{10}NON\_EXEMPT_{it} + \beta_{11}\Delta MAJ\_OWN_{it} + \beta_{12}LN\_BUS\_TYPES_{it} + \beta_{13}UNAUD\_CORR_{it} + \beta_{14}PY\_ADJUST_{it} + \beta_n YEAR\ FE + \varepsilon$

Variables for Sensitivity Tests and Additional Analysis

To test the sensitivity of my findings to the ADJUST measure, I consider the direction of the adjustment by coding NEG_ADJ equal to one when the adjustment reduces reported net capital. In additional analysis, I use a dichotomous restatement variable (RESTATE). Refer to Appendix B for details on creation of this variable. To test the sensitivity of my findings to my size measures, I substitute dichotomous firm size groupings. I code TRIENNIAL as one when the audit firm reports having issuer clients on the PCAOB's public online RASR database but is not an annually inspected firm under the PCAOB's public company inspection program.[31] I code NO_ISSUERS as one when the audit firm reports having no issuer clients on the RASR database. The reference group for these indicator variables is the annually inspected firms. I code ΔAUD_GROUP as negative one when the BD makes a downward switch (i.e., from an annually inspected firm to a triennially-inspected or no-issuer firm, or from a triennially-inspected to a no-issuer firm) and one when the BD makes an upward switch (i.e., from a no issuer firm to a triennially- or annually-inspected firm or from a triennially-inspected firm to an annually-inspected firm); zero otherwise.

[31] Annually inspected firms include BDO, Crowe Horwath, Deloitte & Touche, Ernst & Young, Grant Thornton, KPMG, MaloneBailey, Marcum, RSM, and PricewaterhouseCoopers.

CHAPTER FOUR
Results

Summary Statistics

Table 2 panel A columns 1, 2, and 3 present summary statistics for the samples used to test H1, H2, and H3, respectively. I present winsorized variables, but do not perform the transformations described above for ease of interpretation. Differences between the samples show that columns 2 and 3 draw larger firms with more and bigger BD clients. Panel B presents an auditor change matrix to summarize audit adjustments for the predecessor and successor auditors. This matrix shows consistent preliminary evidence that BDs that change to larger (smaller) audit firms are more (less) likely to record material audit adjustments than they were with the predecessor audit firm, e.g., in the 254 instances where a BD changed from a TRIENNIAL to a NO_ISSUER audit firm, 28.3 (18.9) percent of BDs recorded audit adjustments under the predecessor (successor) audit firm. Finally, Table 3 presents Pearson moment correlations. The matrix shows a positive and significant correlation between ΔAUD_SIZE and ADJUST, but negative and significant correlations with my specialization estimates, supporting H1 and H2 respectively. Each cell reports correlations using the largest available sample between pairs: (18) to (21) show correlations using 568 observations; (22) and (23) using 246 observations; all others use 1,772 observations. I observe positive and significant correlations between ΔAUD_SIZE, ΔAUD_FEES%, ΔAUD_HOURS%, and ADJUST, supporting H3a-f. I observe a negative and significant correlation between SPEC_PRED and ΔAUD_HOURS% but not significant for ΔAUD_FEES% ($p = 0.33$) Collectively, Tables 2 and 3 present preliminary evidence consistent with all directional hypotheses.

H1: Auditor Size and Audit Quality

To test if changing to a larger or smaller auditor impacts likelihood of audit adjustments, Table 4 estimates a logistic model with standard errors clustered by audit firm and by BD. Table 4 Column (1) shows BDs that change to a larger (smaller) auditor (ΔAUD_SIZE) are more (less) likely to record a material audit adjustment. As AUD_SIZE shows a moderately significant negative coefficient, I drop it from the model in (2) and re-run the test to show that the finding is not sensitive to controlling for the size of the new auditor. Column (3) substitutes logarithmically transformed size variables, and (4) uses dichotomous size and change variables. Both show results similar to (1). Finally, I swap NEG_ADJ for ADJUST and observe similar results in (5). This specification shows that the recorded audit adjustments are consequential. I examine the economic significance of the results by comparing 10^{th} to 90^{th} percentile ΔAUD_SIZE (-2,165 vs 884) and fixing all other independent variables, including AUD_SIZE, at their sample means from (1). This predicts an audit adjustment is 3.8 percent more likely when changing to a larger auditor, as opposed to a smaller one (21.5 vs. 17.7 percent).

As (1) is my main auditor size test, I discuss this model's findings. To detect an audit adjustment, the client must misstate the pre-audit financials, and the auditor must both detect the misstatement and require the client to record an adjustment. Though (1) shows larger auditors are negatively associated with audit adjustments at moderate significance, this seems to reflect audit clients who are less likely to misstate pre-audit financial statements. This means BDs that change from one large audit firm to another are less likely to make misstatements that require correction. Table 2 Panel B supports this explanation and shows the lowest average level of ADJUST for BDs with an annually-inspected-firm predecessor (16.4 vs. 22.6 and 24.1 percent for TRIENNIAL and NO_ISSUER firms, respectively).

I find that the strongest predictor of audit adjustments in my model is the recent misstatement and correction of a BD's unaudited Net Capital (UNAUD_CORR, PY_ADJUST). Higher GROWTH and more LN_BUS_TYPES predict more audit adjustments. Aside from a positive and moderately significant coefficient on ΔMAJ_OWN in (2), all other control variables are not statistically significant in all models.

H2: Partner-Specialization and Audit Quality

To test whether partner-specialization improves audit quality, Table 5 estimates a logistic model with standard errors clustered by audit firm and by partner. Evidence negatively supports the non-directional H2. Column (1) shows that SPEC_BDCT is negatively and significantly associated with ADJUST. Column (2) shows that SPEC_PRED is negatively and significantly associated with ADJUST. Column (3) shows that SPEC_PRED2 is negatively associated with ADJUST at moderate significance. As each of these three measures weighs count and size of BD clients differently, and (4) shows that the dichotomous SPEC95 is also negatively and significantly associated with ADJUST, the consistent behavior suggests that results are not sensitive to specialization measurement. Collectively, Table 5 presents evidence that BDs that change to partner-specialists record fewer audit adjustments. I examine the economic significance of (2), my main result, by comparing 10^{th} to 90^{th} percentile SPEC_PRED (23.59 vs 632.48) and fixing all other independent variables at their sample means from (2). This predicts an audit adjustment is 5.7 percent less likely when changing to a specialist auditor, as opposed to a non-specialist (20.2 vs. 14.5 percent).

Because (3) presents a weaker relationship for SPEC_PRED2, specialists with large clients do not appear to drive the observed result. In untabulated analysis, I limit analysis to NO_ISSUER and TRIENNIAL audit partners and observe a statistically significant negative

relationship between SPEC_PRED2 and ADJUST (n = 357, p=0.030).[32] I do not observe evidence of a relationship with SPEC_PRED2 when I limit analysis to ANNUAL firms (n=211, p=.948). This suggests that partner-specialists from smaller firms drive the observed result.[33] That the partner-specialization effect varies with firm size is consistent with the Vanstraelen and Schelleman (2017) review of the private company auditing literature. They suggest audit quality is more sensitive to the "competence, judgment and integrity" of individual auditors in smaller audit firms as quality control systems are likely less sophisticated.

This evidence is consistent with the Bedard et al. (2017a) study that provides some evidence that BD control attestation is worse for small specialist firms than other small firms. At first, both results appear inconsistent with the domain-knowledge theory that enables superior audit quality, but partner-specialists develop stronger awareness of the litigation and reputational risks posed by their clients (Ittonen et al. 2015). As BD litigation and reputation risks, as well as BD demand for audit quality, are low, results suggest that partner-specialists adapt accordingly.

H3: Auditor Size, Partner-Specialization and Audit Quality: The Role of Fees and Hours

To test how auditor size and partner-specialization affect audit quality, I look at their relationships with audit fees and audit hours. Table 6 performs a mix of OLS and logistic regressions with standard errors clustered by audit firm and partner. Column (1) shows that a change in auditor size is positively and significantly linked to the percent change in audit fees, supporting H3a. I demonstrate the economic significance of a change in auditor size by fixing the

[32] I observe a similarly significant relationship on SPEC_PRED (p=0.011) or SPEC_BDCT (p=0.005).
[33] In untabulated analysis, I find that using a change in SPEC_PRED measure shows a negative and insignificant relationship with ADJUST but the two-tailed p-value is 0.12. As this test requires the predecessor and successor firms be selected for inspection, the sample size and number of covered audit firms is halved (n=253). Further untabulated analysis reveals a negative and moderately significant effect on change in SPEC_PRED (p=0.065) when I drop ANNUAL firms, consistent with the SPEC_PRED2 test above. Though results are generally consistent with my main tests, I consider the change in SPEC_PRED measure to be less informative when comparing specialization on a sample that spans firm size.

new auditor's size and adjusting the previous auditor's size downward by one standard deviation of change in auditor size from the H1 sample (5,380). This increase, relative to the previous auditor, predicts a 41.7 percent increase in audit fees. I observe no evidence of a relationship between hiring a partner-specialist and a change in audit fees.

Column (2) shows that the percent change in audit fees is significantly and positively linked to the percent change in audit hours, supporting H3b. For each percent change in audit fees, audit hours increase by .80 percent. After controlling for this fee-driven increase in hours, I observe that the direct effect of a change in auditor size is positively and significantly linked to the percent change in audit hours, supporting H3c. Similar to the analysis described above, I vary the previous auditor's size downward by one standard deviation from the H1 sample (5,380) and show a 33.0 percent increase in auditor hours incremental to that explained by the change in fees tested in H3a. Finally, with respect to H3g, I observe that SPEC_PRED is negatively and significantly associated with ΔAUD_HOURS%. This suggests specialists do earn some premium for their work through greater efficiency. This result is economically significant as moving one standard deviation along SPEC_PRED (390) predicts a 13.6 percent audit hour decrease.

Column (3) shows that, after controlling for ΔAUD_SIZE and SPEC_PRED, ΔAUD_HOURS% is positively associated with ADJUST at a moderately significant level, supporting H3d. I examine the economic significance of this result by comparing 10^{th} to 90^{th} percentile ΔAUD_HOURS%, and fixing all other independent variables at their sample means. My model predicts an audit adjustment is more than twice as likely when changing to an auditor that greatly increases audit hours, as opposed to decreases (25.6 vs. 11.1 percent). As it is possible that audit hours are mechanically associated with detected audit adjustments, I explore the Pearson moment correlation between ADJUST and ΔAUD_HOURS% in all recurring audit

relationships. As both the winsorized and unadjusted correlations are insignificant (r = -.018, p = .4177, n=2,090),[34] I make no further adjustment to my H3d test.

After controlling for ΔAUD_HOURS% and SPEC_PRED, I observe that change in auditor size is positively associated with ADJUST at moderate significance, supporting H3e. I examine the economic significance of this result by comparing 10th to 90th percentile ΔAUD_SIZE, and fixing all other independent variables at their sample means. My model predicts an audit adjustment is almost three times as likely when changing to a much larger auditor, as opposed to one that is much smaller (8.2 vs. 24.3 percent). Finally, with respect to H3h, I find no evidence that hiring a partner-specialist provides a direct effect on audit quality (coefficient is negative and p = .587).

Collectively, the H3 hypotheses support the H1 finding and show associations consistent with an argument that change in auditor size improves audit quality through increasing fees and hours. Furthermore, findings suggest that changing to a larger auditor improves audit quality incremental to the effect through audit hours. This incremental effect suggests that larger firms use their time more effectively. It is not clear that this results from better quality control systems or firm-knowledge resources, greater auditor independence, or some other explanation.

The H3 hypotheses may also explain why partner-specialists are associated with fewer audit adjustments as they cut hours and do not appear to improve audit quality relative to these cuts. This result suggests that partners who specialize in BD audits respond to incentives to prioritize cost reduction over reporting quality. Still, I cannot identify the source; whether the results reflect learned behavior, partners who are either firm-assigned to or personally select BD industry specialization are predisposed to prioritize cost reduction over reporting quality, a

[34] Untabulated OLS regression on ΔAUD_HOURS% shows no evidence of a positive ADJUST effect after adding all control variables from model 1 (b=-0.065, p=.384, n=1,980).

market-penetration measure that attributes specialization to partners that BD managers are willing to hire, or partners who succeed in the market over-commit and become too busy to provide comparable quality.

Additional Analysis

Restatements

Although audit literature frequently uses restatements to indicate low audit quality (see Defond and Zhang 2014; for review), they are infrequent. This is especially true in the BD industry where only one percent of all audited reports are restated. Because only 21 BDs that change auditors restate that year's audited report, I abandon the auditor change design in favor of a levels-model. In untabulated analysis, I drop ΔAUD_SIZE and substitute RESTATE, as described in Appendix B, for ADJUST in model 1 and find that AUD_SIZE is significantly and negatively associated with restatements (n=17,823, p=.000), as expected. Next, I substitute SPEC_PRED for AUD_SIZE and observe no evidence of an effect (n=5,462, p=0.828).[35] Finally, I add back AUD_SIZE and observe no evidence of an effect on SPEC_PRED but do see a negative and significant relationship between AUD_SIZE and RESTATE (p=.037). Collectively, these results provide evidence consistent with H1.

[35] For this test, I cluster standard errors by BD and audit firm. Because the partner findings are not significant, I perform no further control by partner.

CHAPTER FIVE
Conclusions

Limitations

This study is subject to important limitations. First, I create an audit adjustment measure by comparing pre-audit financial statements to audited financial statements. This means, for my purposes, an audit adjustment can only exist when management misstates its pre-audit net capital, the auditor detects the misstatement, and management make the appropriate correction. Therefore, the measure is sensitive to management reporting quality. More concerning, however, is the potential for this measure to also include management identified adjustments that are independent from the auditor. I partially address this data limitation in a number of ways. First, I control for non-audit period adjustments that indicate management has previously misstated unaudited financial statements, caught and corrected the misstatement, and re-filed with the regulator. Next, I address through variable design by considering the timing of an unaudited report correction when re-submitted (as described in Appendix B). Finally, I examine the auditor size and partner-specialization effects only when a BD changes auditors. Collectively, this means that management would need to improve its post-report scrutiny in an audit period, but not a non-audit period, in the year the BD changes auditors, but not also improve the pre-audit reporting quality that would reduce the number of misstatements. Although my design makes an improvement, some measurement noise remains.

As I cannot randomly assign auditors to BDs, and the BD jointly determines its audit firm and fees, I do not claim to be detecting causal effects. Furthermore, I only observe change in fee and hour data when both the predecessor and successor audit firms are selected for inspection by

the PCAOB. As a result, this sample includes proportionally more annually-inspected firms than exist in the population.

Future Research

While this study examines audit quality supply, future research can study BD audit quality demand. Such research can examine why it is that, although privately-owned BD managers can directly hire their auditors and it is not clear who or what incentivizes managers to hire high quality auditors, audit quality is not uniformly low. Next, a growing number of BDs request confidential treatment for their audited report. Future research can explore why some privately-owned companies publicly release a redacted report and other companies voluntarily disclose all contents. Next, this study examines years 2010 – 2015. The SEC requirement for BD auditors to register with the PCAOB became effective in 2009. Bedard et al (2017a) find little evidence of changes in auditor attestation before and after this registration requirement. Bedard et al. (2017b) provide evidence that low quality auditors leave the public company audit market rather than register with the PCAOB. Future research can study other changes to BD audits to understand the effect of PCAOB oversight. Next, the 2014 SEC amendments to the BD Reporting Rule (17a-5) serve to clarify the SEC's priorities regarding BD audits by increasing the requirements around the Net Capital and Customer Protection Rules (15c3-1 and 15c3-3, respectively). This study examines the auditors' effect on the Net Capital Rule but not the Customer Protection Rule. Future research can examine what relationship exists, if any, between auditor characteristics and customer-protection.

Conclusion

This study provides a comprehensive analysis of an under-researched institutional setting with a more precise measure of audit quality than is common in the audit literature. By revealing

BDs that change to larger auditors are more likely to record material audit adjustments and BDs that select partner-specialists from smaller firms are even less likely to record material audit adjustments, this study yields important inferences. First, BDs that change to larger audit firms pay higher fees to an auditor who works longer hours incremental to the relationship with fees, and are more likely to correct misstatements incremental to the relationship with audit hours. Whether by enhanced auditor independence, or firm resources that improve the effectiveness of audit effort (e.g., quality control systems, firm-knowledge resources), or some other explanation, larger audit firms improve audit quality more than the change in hours would suggest.

On the contrary, partner-specialists use fewer hours, and the BDs that change to them are less likely to record material audit adjustments. Specialists in firms with no issuer clients drive this result. Therefore, this single-industry study suggests that partners who specialize in low-risk audits - with clients who do not consistently demand audit quality respond to the setting - cut audit effort, and under-perform relative to non-specialists. Whether by oversight, incentives, or different customer demand; partner-specialists in larger audit firms do not also under-perform.

Second, as the research design naturally contrasts the successor and predecessor, and audit adjustments increase when switching from smaller auditors, I conclude that smaller auditors allow levels of uncorrected misstatements between 4.55 and 12.78 percent of their audited financials. Conversely, only 1.2 percent of these BDs restate their audited financials with a material change to net capital. Third, as the SEC and FINRA use audited BD reports to inform their regulatory oversight, my study suggests that regulators can place greater reliance on BD reports audited by larger audit firms, relative to smaller firms. They might also increase scrutiny on partner-specialists from smaller audit firms by using my approach to perform disaggregated

analysis that identifies audit firms, offices, and partners that do not appear to be detecting misstatements that their client corrects.

APPENDIX A

Variable	Definition	Source
ADJUST	= 1 if audited net capital minus pre-audit net capital > 5 percent of pre-audit net capital; 0 otherwise. Refer to text for more precise description	AA/SEC/ FOCUS
ANNUAL	= 1 if audit firm is annually inspected under the PCAOB's public company inspection program.	RASR
AUD_CHANGE	=1 if BD changed audit firm	AA
AUD_SIZE	= total CPAs in firm as reported on PCAOB RASR Form 2	NP_RASR
GROWTH	= current minus prior year BD_SIZE divided by prior year amount	FOCUS
LEVERAGE	= pre-audit: total liabilities / total assets	FOCUS
LN_BD_SIZE	= natural log of pre-audit gross revenue; refer to text for more description.	FOCUS
LN_BUS_TYPES	= natural log count of authorized lines of business per BrokerCheck	BCHECK
NEG_ADJ	= 1 if ADJUST changes net capital downward; 0 otherwise.	
NO_ISSUERS	= 1 if audit firm reports having no issuer clients in annual registration	RASR
NON_EXEMPT	=1 if BD maintains custody of customer assets; 0 otherwise. Refer to text for more description.	FOCUS
PY_ADJUST	= ADJUST from prior year	FOCUS
ROS	= pre-audit: net income / revenue	FOCUS
SPEC_BDCT	= natural log count of BDs audited by partner	PCAOB
SPEC_PRED	= Predicted square root of audit hours, summed by audit partner (as described in Appendix C panel C)	PCAOB/AA
SPEC_PRED2	= Natural log of predicted square root of audit hours, squared, and summed by audit partner (as described in Appendix C panel C). Purpose is to increase weight of larger clients relative to SPEC_PRED	PCAOB/AA
SPEC95	= 1 if in the 95th percentile of SPEC_PRED by partner for that year.	
TRIENNIAL	= 1 if audit firm reports having issuer clients in annual registration but is not annually inspected under the PCAOB's public company inspection program.	RASR
UNAUD_CORR	=1 if any BD corrected FOCUS filing for a non-audit period and not within 21 days of audit report; 0 otherwise	FOCUS
ΔAUD_FEES%	= current minus prior year audit fees divided by prior year amount	PCAOB
ΔAUD_GROUP	= -1 when the BD makes a downward change among annual, triennial, and no issuer auditors; 1 when upward; 0 otherwise. Refer to text for more description.	AA/RASR
ΔAUD_HOURS%	= current minus prior year audit hours divided by prior year amount	PCAOB
ΔAUD_SIZE	= new minus previous AUD_SIZE, if BD changes auditor; 0 otherwise	NP_RASR
ΔLEVERAGE	= current minus prior year LEVERAGE	FOCUS
ΔMAJ_OWN	= 1 when owner with >50 percent ownership has a “position start” or “relationship established” date within year preceding audit report	BCHECK
i and t	= BD and year indicators, respectively	

Appendix A presents variable definitions and sources. AA = Audit Analytics. SEC indicates manual collection of audited reports that receive confidential treatment from the SEC. FOCUS indicates non-public, unaudited report. BCHECK is FINRA's public BrokerCheck database as accessed in Aug 2015. RASR indicates the PCAOB's public database. NP_RASR indicates the PCAOB's non-public RASR database. PCAOB indicates non-public data reported by inspected audit firms.

APPENDIX B
Targeted procedures over audit adjustments and restatements

As stated in the text, I exploit the timing difference between the unaudited FOCUS report that must be filed 17 business days from the closing date and the audited report that is not due until the 60th calendar day following fiscal year-end to identify audit adjustments. As BDs may submit multiple unaudited FOCUS or audited reports, I examine the timeline and compare contents to reduce the number of changes improperly coded as adjustments or restatements.

The FOCUS report is due by the 17th business day. I count days between this due date and the first submitted audited annual report and then calculate the midpoint.[36] I classify the latest submission before the midpoint as the pre-audit report (*Base_FOCUS* in Figure 2) because I expect there is a greater likelihood the correction was identified by management. Any correction submitted after the midpoint would be attributable to the auditor. I also run my analysis without considering re-submission timing and note that my results are not sensitive to this design choice.

As noted in Table 1, I only remove exact match duplicate observations. I retain the rest for comparison to FOCUS reports to inform selection in a way that reduces the likelihood of improperly coding an *Audit Analytics* data error as an audit adjustment. Multiple BD submissions do not always reflect an update as, for example, many re-submissions include a previously forgotten form, or even a report for an improperly labeled BD subsidiary. To inform my designation, I select the latest FOCUS report filed up to one day after the first SEC submission. I compare this FOCUS report to all SEC reports filed within seven days of each other. I then pick the SEC report that is most similar to FOCUS across total assets, total liabilities, net capital, and minimum required net capital, and designate it as the initial audited reported.

[36] I winsorize this calculation at the 95th percentile to allow similar auditor entry in spite of seriously delayed reports.

To further reduce the potential for audit adjustment and restatement coding errors, I employ targeted procedures. First, I check if a difference between FOCUS and SEC reports can be explained by failing to adjust for financial statements reported "in thousands" or "in millions" and adjust accordingly.[37] If not, I explore whether missing a single digit from the reported number can explain the difference. As this coding error could trigger improper classification as an audit adjustment or restatement, I review all annual reports with a decrease of 90 percent or more, unless also supported by *FOCUS_SEC1*, and manually change all incorrect fields.[38]

Finally, I recognize that I cannot identify an audit adjustment if *Audit Analytics* misses coding the variable or the BD requests that net capital receive confidential treatment from the SEC. Therefore, I note all observations missing net capital and hand collect missing variables from either the public or confidential SEC reports, when available.

As stated above, multiple BD submissions do not always reflect an update as many include a partial re-submission for a previously forgotten form, or even a report for a subsidiary of the BD. Therefore, when multiple SEC reports are submitted within seven days of each other, I assume insufficient time has passed to suggest restatement. After discarding other reports filed in the same week as *SEC1*, I designate the final SEC submission as *SEC2*. I set RESTATE equal to one when any difference between *SEC1* and *SEC2* is greater than 5 percent of net capital. BDs can also restate through a FOCUS submission. Therefore, I designate the final FOCUS report, if submitted more than seven days after *SEC1*, as *Final_FOCUS*. Mirroring the process above, I set RESTATE equal to one when *Final_FOCUS* differs by greater than 5 percent of net capital.

[37] I multiply the SEC number by 1,000 (1M) and check if the difference is less than 2,000 (2M) of the FOCUS number. If yes, I correct the *Audit Analytics* data.
[38] I set 90 percent based on trial supported criteria (e.g., 59 is 10 percent of 590).

APPENDIX C
Construction of Variables

Panel A: Audit Firm Changes

Audit Analytics records the name of the signing audit firm. If the audit firm name is different than the previous year, AUD_CHANGE would be coded as one. This difference could be attributable to the client changing audit firms, or it could be a continuing client relationship with an audit firm that was acquired, merged, or simply changed its name. I perform manual procedures to reduce the noise in these measures.

First, I use year over year changes in a BD's Audit Analytics "Auditor - PCAOB Registration Number" to identify audit firm changes. This field links with the public PCAOB Form 2 filings obtainable by firm on the PCAOB Registration, Annual and Special Reporting database. A firm that changes its name will continue to use its registration, but a firm that is acquired will adopt its new audit firm's registration. To identify these acquired or merged firms and their eventual registration number, I perform targeted procedures over all firms that exit the market over two years. If a firm with more than two clients exits the market during my analysis phase, 2010-2015, I look at the next year's auditor using Audit Analytics data for each former BD client. If a critical mass move to the same audit firm, I explore the possibility that this firm was acquired by or merged with the new firm. To conclude, I use some combination of the old audit firm's website, the new audit firm's website, a google news search or judgment using the old and new firm names (e.g., if the previous auditor is "John, Paul, George, and Pete LLP" and the new auditor is "John, Paul, George, and Ringo LLP", and the latter did not previously exist, I consider this a recurring engagement). If I determine the firm was acquired, merged, or simply changed its name, I do not code AUD_CHANGE as one

Panel B: Ownership Information

To identify merger and acquisition activity, I obtain ownership information from FINRA's BrokerCheck as accessed in August 2015. BrokerCheck discloses direct and indirect owners (owned through an intermediary) with their ownership range. Ownership range is disclosed as one of six options: (A) Less than 5%, (B) > 5% but less than 10%, (C) > 10% but less than 25%, (D) > 25% but less than 50%, (E) > 50% but less than 75%, and (F) > 75%. To assign specific ownership values, I adapt the Dimmock, Gerken, and Marietta-Westberg (2015) process that considers range disclosures of all owners to increase precision of ownership estimates. Starting with group F (>75%), I count the number of owners within each other range and multiply that count by the high and low constraints. I then select the midpoint of that calculation and ensure it is within the disclosed range. Using this assigned value, I repeat the process for each smaller group until I have assigned values for all groups. I verify assignments by checking that ownership sums to 100 percent for each BD. I peer through the ownership structure and assign values to the ultimate indirect owner using this same algorithm at each intermediary. For any majority owner (>50 percent ownership) with a "position start date" or "relationship established" within the year preceding the audited report, I code ΔMAJ_OWN as one.

Panel C: Partner-Specialization

When an audit firm is selected for inspection under the BD Interim Inspection Program, the PCAOB collects data for all of the firm's BD engagements. I use reported audit hour data to calibrate a model predicting hours that I extrapolate to all engagements. As my inspected-firm sample is not randomly selected, I calibrate my prediction model on observations weighted by the inverse probability of inclusion in the inspected-firm sample. I estimate probability of

inclusion with a bivariate probit model using only audit firm characteristics (eq1) (Heckman 1979). Dividing the fitted value by one yields the inverse probability of inclusion. I transform reported audit hours using the square root (√AUDIT_HOURS). I predict transformed reported audit hours using OLS regression on BD characteristics (eq2). Figure 3 panel A describes GROUP assignment, panel B presents prediction distribution, and panel C compares predictions to reported audit hours. To protect engagement-level confidentiality of the reported audit hours, I censor the graphed data at the 95th percentile for reported hours.

(eq1) ADR = f(ANNUAL, TRIENNIAL, #BD_CLIENTS, YEAR)

(eq2) √AUDIT_HOURS = F(AA_FS_ACCTS, AA_FS_ACCTS^2, GROUP, YEAR)

I estimate whether a BD engagement is audited by an inspected-firm that must provide information to the PCAOB (ADR). To estimate likelihood, I use ANNUAL, TRIENNIAL, the firm's BD client count for the inspection year (#BD_CLIENTS), and YEAR indicators. AA_FS_ACCTS collectively refers to reported assets, liabilities, net capital, and minimum required net capital obtained from FOCUS. To reduce the number of missing AA_FS_ACCTS, I supplement missing FOCUS data with reported numbers from *Audit Analytics*. I square all AA_FS_ACCTS to examine non-linear relationships. I assign BDs to one of six groups based on required net capital. I detail the rationale for each assignment in Panel A of Figure 3. I sum predicted hours across BDs by partner in each year to proxy for partner-expertise (SPEC_PRED). As I predict hours on √AUDIT_HOURS, I code SPEC_PRED2 by squaring the model's prediction for each engagement and the summing across BDs by partner in each year before logarithmically transforming the summation. This change increases the relative weight of auditing large, relative to small BDs. Finally, I code SPEC95 as one for the 95th percentile of SPEC_PRED by partner for that year.

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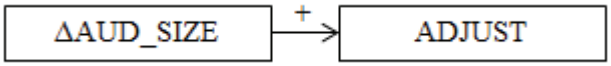
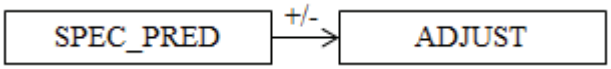
FIGURE 1
Hypothesis Visualizations

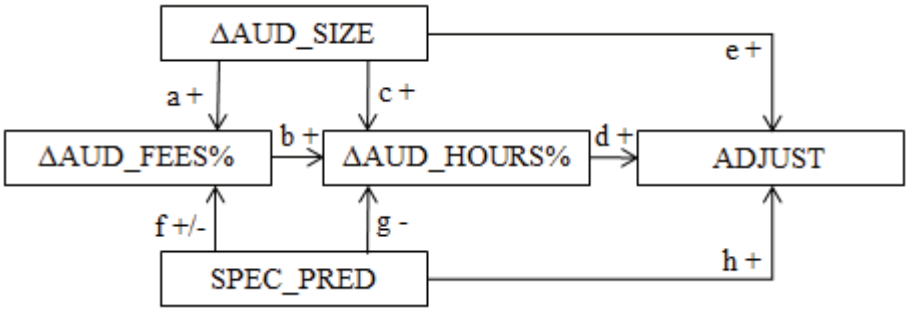
Panel A: H1: *BDs that change to larger (smaller) auditors are more (less) likely to record material audit adjustments.* (N = 1,772)



Panel B: H2: *Conditional on auditor change, BDs that select partner-specialists are more or less likely to record material audit adjustments.* (N = 568)

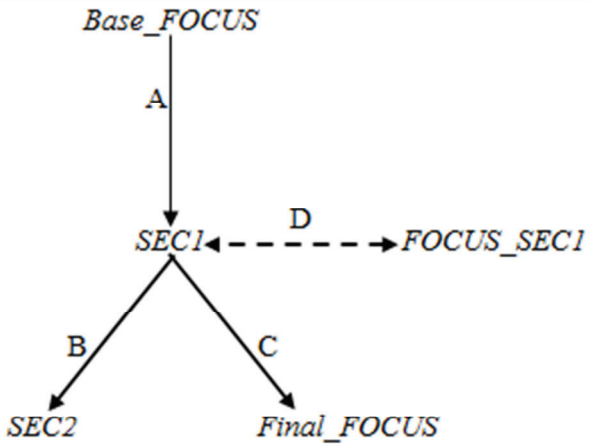


Panel C: H3a through H3h: Auditor Size, Industry-Specialization and Audit Quality: The Role of Fees and Hours. (N = 246)



See Appendix A for variable descriptions

FIGURE 2
Audit Adjustments and Restatements Visual



Base_FOCUS - Either initial unaudited FOCUS Report (17th Business Day) or FOCUS Correction soon thereafter

SEC1 - Audited Annual Report (by 60th calendar day if not granted extension)

SEC2 - Amended Audited Annual Report (> 7 days after *SEC1*)

Final_FOCUS - Final submitted FOCUS Correction

FOCUS_SEC1 - I select the latest FOCUS report before SEC1 filing + 1 day, OR subsequent FOCUS report that is more similar to SEC1

I compare net capital across submissions, as follows:

A - If $|SEC1 - Base\_FOCUS| \geq |Base\_FOCUS * .05|$, $ADJUST = 1$

B - If $|SEC2 - SEC1| \geq |SEC1 * .05|$, $RESTATE = 1$

C - If $|Final\_FOCUS - SEC1| \geq |SEC1 * .05|$, $RESTATE = 1$

D - Used to identify questionable *ADJUST* for further manual review

FIGURE 3
Audit Hour Predictions for Industry-Specialization Measures

Panel A: Group Assignment

Group	Range	Description [SEA Rule 15c3-1(a)(2)]
1	= 5000	BD does not receive customer funds/securities, or owe either to customers.
2	< 50,000	BDs who sell redeemable registered investment company shares must maintain at least $25K
3	< 100,000	BDs that receive but do not hold customer securities must maintain at least $50K
4	< 250,000	BDs that receive, but promptly send customer funds to custodian must maintain at least $100K.
5	< 1,500,000	Carrying BDs (custody of customer funds) must maintain at least $250K
6	≥ 1,500,000	Prime Brokers must maintain at least $1.5M

Note: I detail thresholds above. Unsecured liabilities, customer debts, and other items also increase requirement

Panel B: Distribution

PCTL	Prediction
Min	7.17
1%	7.17
5%	7.17
10%	7.97
25%	10.11
50%	14.86
Mean	17.15
75%	21.12
90%	28.12
95%	36.15
99%	53.10
Max	124.13

Panel C: Accuracy of Predicted Hours

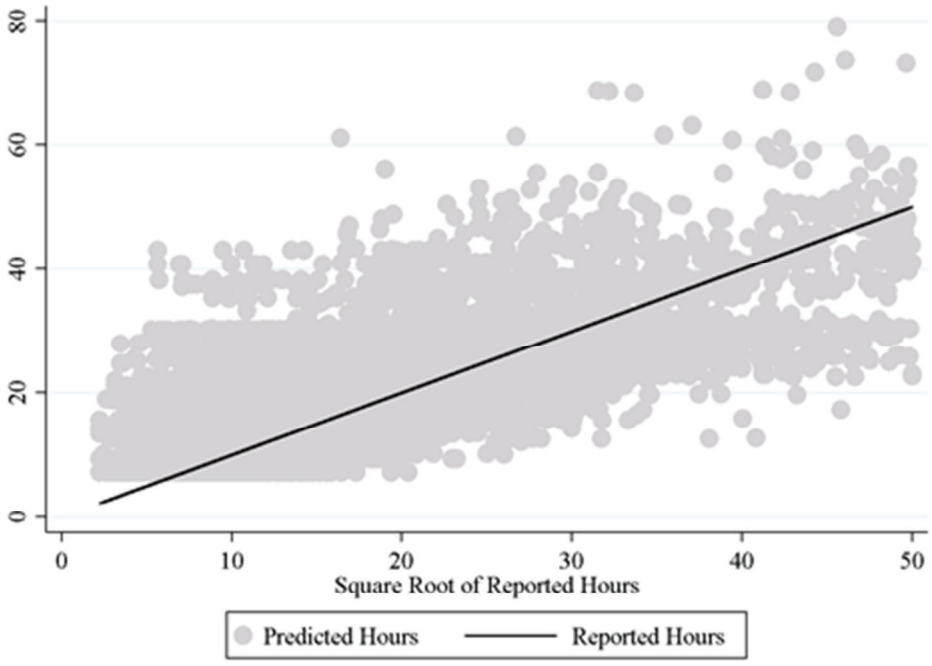


Figure 3 Panel A details Group assignment for predicting hours. Panel B details the predicted hour distribution for all BDs. Panel C compares actual to predicted hours for ADR BDs (censor at 95th pctl reported hours)

TABLE 1
Sample Selection

Total entries in Audit Analytics (AA), 2010 - 2015	27,119
Less: Missing total assets (Net of 16 manually collected)	(342)
Less: Missing from EDGAR or wrong entity report (e.g., subsidiary)	(8)
Less: Multiple fiscal year ends for same BD	(68)
Less: Exact match duplicates	(134)
Less: Multiple entries for BD, same fiscal year end	(1,044)
Full Population	25,523
Less: Missing FOCUS Part II or IIA report	(754)
Less: Publicly owned BD	(1,834)
Less: Missing in-year or lag variables: revenue, auditor size, net capital, etc.	(5,112)
BD-Year obs (3,807 unique BDs, 880 auditors)	17,823
Auditor changes among BD-Year obs (1,447 unique BDs, 418 auditors)	1,772
Auditor changes with partner data (515 BDs, 304 partners, 136 firms)	568
Auditor changes with hour/fee data (235 BDs, 164 partners, 73 firms)	246

Table 1 presents the sample selection process. I drop incomplete or mislabeled audited reports and consolidate those with multiple reports in a period into one observation. I drop audited reports missing a corresponding entry in the FOCUS database and publicly owned BDs. I drop those missing current year or prior year variables necessary for my analysis. I then identify BDs who change auditors for my H1 test; changes with partner data for H2 tests; and changes with current and prior year hour and fee data for my H3 hypotheses.

TABLE 2
Summary Statistics

Panel A: Descriptive Statistics

	(1) *N = 1,772*		(2) *N = 568*		(3) *N = 246*	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
ΔAUD_FEES%					0.37	0.00
ΔAUD_HOURS%					0.79	-0.07
ADJUST	0.22	0.00	0.21	0.00	0.20	0.00
NEG_ADJ	0.15	0.00	0.14	0.00	0.13	0.00
AUD_SIZE	1,000	16	2,500	368	3,400	521
ΔAUD_SIZE	-310	-3	143	3	-1,300	-110
TRIENNIAL	0.43	0.00	0.37	0.00	0.38	0.00
NO_ISSUERS	0.42	0.00	0.26	0.00	0.17	0.00
ΔAUD_GROUP	-0.04	0.00	0.10	0.00	-0.16	0.00
SPEC_BDCT			15.73	6.00	13.64	6.00
SPEC_PRED			273	142	266	143
SPEC_PRED2			5,600	3,000	6,100	3,500
SPEC95			0.32	0.00	0.33	0.00
BD_SIZE	4,200,000	390,000	9,700,000	700,000	15,000,000	1,800,000
GROWTH	0.61	0.03	0.52	0.02	0.57	0.02
ROS	-0.77	0.00	-0.70	0.01	-0.69	0.03
LEVERAGE	0.29	0.22	0.32	0.26	0.32	0.25
ΔLEVERAGE	0.01	0.00	0.01	0.00	0.01	0.00
NON_EXEMPT	0.04	0.00	0.07	0.00	0.08	0.00
M&A	0.04	0.00	0.07	0.00	0.06	0.00
BUS_TYPES	5.94	5.00	6.33	5.00	6.52	5.00
UNAUD_CORR	0.28	0.00	0.28	0.00	0.24	0.00
PY_ADJUST	0.22	0.00	0.18	0.00	0.15	0.00

Panel B: Audit Adjustments by Predecessor and Successor Auditor

	From ANNUAL			*From TRIENNIAL*			*From NO_ISSUERS*			**Total**		
		ADJUST			ADJUST			ADJUST			ADJUST	
To:	n	PY	CY	n	PY	CY	n	PY	CY	n	PY	CY
ANNUAL	138	15.9%	14.5%	82	14.6%	22.0%	46	19.6%	30.4%	266	16.2%	19.5%
TRIENNIAL	138	19.6%	16.7%	355	24.2%	25.4%	264	19.7%	24.6%	757	21.8%	23.5%
NO_ISSUERS	66	24.2%	19.7%	254	28.3%	18.9%	429	20.0%	23.1%	749	23.2%	21.4%
Total	342	19.0%	16.4%	691	24.6%	22.6%	739	19.9%	24.1%	1,772	21.6%	22.0%

Table 2 presents descriptive statistics. Panel A shows all variables described in Appendix A. Column (1) presents the sample used to test H1 (N =1,772); (2) presents the sample for H2 (N=568); (3) presents the sample for H3 (N=246). I do not transform variables for this Table. Panel B shows the mean prior year (PY) and current year (CY) ADJUST by predecessor and successor auditor group when there is an auditor change.

TABLE 3
Correlations

Num	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
(1)	ADJUST	1.00																					
(2)	NEG_ADJ	***0.79***	1.00																				
(3)	AUD_SIZE	-0.02	-0.02	1.00																			
(4)	ΔAUD_SIZE	***0.06***	***0.05***	***0.48***	1.00																		
(5)	TRIENNIAL	0.03	0.00	***-0.25***	***-0.18***	1.00																	
(6)	NO_ISSUERS	-0.01	0.01	***-0.31***	-0.04	***-0.74***	1.00																
(7)	ΔAUD_GROUP	***0.05***	***0.04***	***0.19***	***0.44***	***0.25***	***-0.48***	1.00															
(8)	LN_BD_SIZE	0.03	0.01	***0.28***	0.02	0.00	***-0.19***	***0.04***	1.00														
(9)	GROWTH	***0.06***	***0.06***	***-0.05***	0.02	0.00	***0.04***	0.02	***0.10***	1.00													
(10)	ROS	***0.04***	0.02	0.01	0.02	-0.02	0.02	-0.01	***0.60***	***0.14***	1.00												
(11)	LEVERAGE	***0.06***	0.02	***0.12***	0.04	-0.02	***-0.06***	0.02	***0.34***	-0.04	***0.06***	1.00											
(12)	ΔLEVERAGE	0.04	-0.01	-0.01	0.03	0.01	0.01	0.04	0.00	***0.09***	***-0.04***	***0.39***	1.00										
(13)	NON_EXEMPT	-0.03	-0.03	***0.16***	0.00	0.00	***-0.10***	0.03	***0.18***	-0.04	0.03	***0.21***	0.02	1.00									
(14)	M&A	-0.02	-0.02	***0.15***	***0.09***	-0.03	***-0.07***	***0.08***	***0.07***	***0.08***	0.01	***0.06***	0.03	***0.05***	1.00								
(15)	LN_BUS_TYPES	***0.06***	***0.06***	0.04	0.01	0.03	***-0.06***	0.02	***0.30***	***-0.14***	***0.13***	***0.25***	0.01	***0.09***	0.04	1.00							
(16)	UNAUD_CORR	***0.10***	***0.07***	-0.01	0.03	0.01	0.00	***0.04***	***0.06***	-0.01	0.03	***0.08***	0.01	***0.06***	***0.06***	***0.12***	1.00						
(17)	PY_ADJUST	***0.26***	***0.23***	***-0.06***	-0.02	0.01	0.04	***-0.06***	0.03	0.01	***0.07***	***0.07***	-0.01	***-0.06***	-0.01	***0.07***	***0.11***	1.00					
(18)	SPEC_BDCT	***-0.11***	-0.06	***-0.35***	***-0.21***	***-0.10***	***0.58***	***-0.36***	***-0.19***	0.03	-0.01	-0.03	0.05	***-0.11***	***-0.07***	***-0.11***	-0.01	-0.05	1.00				
(19)	SPEC_PRED	***-0.09***	***-0.07***	***-0.22***	***-0.11***	***-0.19***	***0.53***	***-0.29***	***-0.15***	0.04	0.01	-0.04	0.02	-0.04	-0.04	***-0.10***	0.01	-0.05	***0.78***	1.00			
(20)	SPEC_PRED2	***-0.11***	-0.05	-0.06	***-0.13***	***-0.16***	***0.36***	***-0.30***	0.07	-0.01	0.02	***0.14***	0.05	***0.12***	-0.01	0.01	0.05	***-0.11***	***0.85***	***0.70***	1.00		
(21)	SPEC95	***-0.13***	-0.07	***-0.20***	***-0.19***	***-0.11***	***0.47***	***-0.37***	***-0.13***	0.04	-0.06	0.01	***0.08***	-0.03	***-0.08***	***-0.10***	-0.03	-0.06	***0.78***	***0.65***	***0.70***	1.00	
(22)	ΔAUD_FEES%	***0.16***	***0.16***	***0.22***	***0.40***	-0.07	***-0.17***	***0.42***	***0.15***	0.10	***0.11***	0.10	0.09	-0.02	***0.24***	***0.12***	***0.21***	0.07	***-0.15***	-0.06	-0.03	-0.08	1.00
(23)	ΔAUD_HOURS%	***0.20***	***0.17***	***0.36***	***0.50***	***-0.16***	***-0.16***	***0.46***	***0.12***	0.08	0.10	0.09	***0.14***	-0.07	***0.14***	0.10	***0.16***	***0.12***	***-0.22***	***-0.15***	***-0.12***	***-0.11***	***0.59***

Table 3 presents Pearson moment correlations for the largest available sample of each variable pair, i.e., correlations with (18) - (21) use 568 observations, (22) and (23) use 246 observations. All others use 1,772. Italicized font marks two-tailed 10 percent significance. Variables presented as defined in Appendix A.

TABLE 4
The Effect of Changing Auditor Size on Audit Quality

	(1) ADJUST	(2) ADJUST	(3) ADJUST	(4) ADJUST	(5) NEG_ADJ
AUD_SIZE	(0.00005)				(0.0000)
	0.064				0.189
ΔAUD_SIZE (H1)	0.00008	0.00006			0.0001
	0.004	0.005			0.020
LN_AUD_SIZE			(0.05889)		
			0.074		
LN_ΔAUD_SIZE			0.07959		
			0.002		
TRIENNIAL				0.1906	
				0.358	
NO_ISSUERS				0.1951	
				0.423	
ΔAUD_GROUP				0.2739	
				0.009	
LN_BD_SIZE	(0.00069)	(0.01845)	0.00480	(0.0118)	0.0139
	0.985	0.585	0.899	0.741	0.733
GROWTH	0.07604	0.08009	0.07592	0.0784	0.0998
	0.026	0.018	0.028	0.024	0.003
ROS	0.01382	0.02250	0.01102	0.0201	(0.0161)
	0.660	0.461	0.730	0.517	0.658
LEVERAGE	0.37642	0.38467	0.39195	0.4091	0.0814
	0.157	0.148	0.142	0.130	0.785
ΔLEVERAGE	0.23819	0.25421	0.22901	0.2309	(0.2238)
	0.559	0.531	0.574	0.571	0.612
NON_EXEMPT	(0.30621)	(0.36674)	(0.31013)	(0.3573)	(0.2746)
	0.442	0.364	0.438	0.368	0.549
M&A	(0.45963)	(0.50500)	(0.42854)	(0.4417)	(0.5235)
	0.116	0.079	0.151	0.146	0.146
LN_BUS_TYPES	0.13424	0.14656	0.12518	0.1389	0.1785
	0.108	0.075	0.139	0.099	0.054
UNAUD_CORR	0.38024	0.38941	0.36436	0.3777	0.2445
	0.004	0.003	0.005	0.004	0.108
PY_ADJUST	1.20974	1.21374	1.20566	1.2226	1.2094
	0.000	0.000	0.000	0.000	0.000
YEAR FE	Yes	Yes	Yes	Yes	Yes
BD-Years	1,772	1,772	1,772	1,772	1,772
Pseudo R2	0.0811	0.0798	0.0808	0.0806	0.0773
Wald Chi-square	153.47	151.51	152.25	150.60	116.65
Prob. > Chi-square	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4 presents logistic regression on ADJUST (1) - (4), and NEG_ADJ (5). In each column, I show the coefficient above the p-value. (1) shows evidence consistent with H1, that ΔAUD_SIZE increases audit quality. Remaining columns test sensitivity: (2) shows result is not sensitive to including AUD_SIZE; (3) logarithmically transforms AUD_SIZE and then calculates the difference between between predecessor and successor LN_AUD_SIZE as LN_ΔAUD_SIZE; (4) uses dichotomous size variables; and (5) uses NEG_ADJ to be sure the ADJUST is consequential. Each test builds on (1) and further supports H1. I cluster std errors by BD and audit firm, p-values are two-tailed. Appendix A shows variable definitions.

TABLE 5
The Effect of Partner-Specialization on Audit Quality

	(1)		(2)		(3)		(4)	
	Coef	p	Coef	p	Coef	p	Coef	p
AUD_SIZE	(0.00005)	0.15	(0.00004)	0.24	(0.00003)	0.37	(0.00004)	0.26
ΔAUD_SIZE	0.00009	0.01	0.00009	0.01	0.00009	0.01	0.00009	0.01
SPEC_BDCT	(0.22466)	0.01						
SPEC_PRED			(0.00065)	0.01				
SPEC_PRED2					(0.14356)	0.08		
SPEC95							(0.67570)	0.01
LN_BD_SIZE	(0.03068)	0.54	(0.02952)	0.56	(0.01828)	0.72	(0.03034)	0.55
GROWTH	0.03258	0.55	0.03620	0.50	0.03110	0.56	0.03673	0.49
ROS	0.03095	0.41	0.02912	0.44	0.02453	0.51	0.02640	0.50
LEVERAGE	0.31301	0.42	0.23872	0.54	0.28501	0.47	0.29736	0.46
ΔLEVERAGE	0.46787	0.52	0.45025	0.53	0.46869	0.52	0.57141	0.45
NON_EXEMPT	(0.87831)	0.19	(0.78417)	0.25	(0.71804)	0.30	(0.79522)	0.23
M&A	(0.84663)	0.01	(0.83800)	0.01	(0.85564)	0.01	(0.84312)	0.02
LN_BUS_TYPES	0.06947	0.68	0.08129	0.61	0.08996	0.58	0.06284	0.70
UNAUD_CORR	0.64743	0.03	0.65535	0.03	0.65833	0.03	0.63595	0.03
PY_ADJUST	1.32129	0.00	1.33865	0.00	1.32172	0.00	1.32472	0.00
YEAR FE	Yes		Yes		Yes		Yes	
BD-Years	568		568		568		568	
Pseudo R2	0.1080		0.1051		0.1029		0.1103	
Wald Chi-square	68.41		71.01		63.47		67.28	
Prob. > Chi-square	0.0000		0.0000		0.0000		0.0000	

Table 5 presents logistic regression on ADJUST. I cluster standard errors by audit firm and partner, p-values are two-tailed. Refer to Appendix A for variable definitions. (1) and (2) show a negative and significant coefficient on SPEC_BDCT and SPEC_PRED that supports the non-directional H2. (3) shows that a specialization measure that places greater importance on large clients is negative but only moderately significant. (4) substitutes a dichotomous specialist variable and shows a negative and significant coefficient. Collectively, these results provide evidence that BDs who change to partner-specialists record fewer audit adjustments.

TABLE 6
Auditor Size, Partner-Specialization and Audit Quality: The Role of Fees and Hours

Column	(1)		(2)		(3)	
DV	ΔAUD_FEES%		ΔAUD_HOURS%		ADJUST	
H3	a, f		b, c, g		d, e, h	
	Coef	p-value	Coef	p-value	Coef	p-value
ΔAUD_FEES% (H3b +)			0.79866	0.012		
ΔAUD_HOURS% (H3d +)					0.26088	0.080
AUD_SIZE	0.00000	0.835	0.00004	0.012	(0.00006)	0.284
ΔAUD_SIZE (H3:a, c, e +)	0.00008	0.000	0.00006	0.000	0.00010	0.072
SPEC_PRED (H3:f+/-, g-, h+)	(0.00013)	0.382	(0.00035)	0.000	(0.00020)	0.581
LN_BD_SIZE	0.06061	0.028	0.00303	0.932	(0.07057)	0.524
GROWTH	0.08446	0.001	0.02489	0.550	(0.07677)	0.469
ROS	(0.01360)	0.546	0.01469	0.436	0.06850	0.476
LEVERAGE	(0.08736)	0.730	0.26632	0.344	(0.46385)	0.542
ΔLEVERAGE	0.69999	0.066	0.64498	0.256	0.80855	0.502
NON_EXEMPT	(0.13648)	0.479	(0.52115)	0.107	(1.25997)	0.381
M&A	0.67936	0.040	(0.12755)	0.613	(1.08357)	0.143
LN_BUS_TYPES	0.06876	0.314	0.03541	0.603	0.43326	0.151
UNAUD_CORR	0.35272	0.023	0.06933	0.562	0.59571	0.192
PY_ADJUST	0.09453	0.569	0.04666	0.814	1.50165	0.000
YEAR FE	Yes		Yes		Yes	
BD-Years	246		246		246	
R2 or Pseudo R2 (Col 3)	0.3673		0.6127		0.1803	
F-Stat or Wald Chi-sq (Col 3)	7.03		15.04		39.92	
Prob. > Chi-square	0.0000		0.0000		0.0021	

Table 6 Columns (1) and (2) perform OLS regression on ΔAUD_FEES% and ΔAUD_HOURS%. (3) performs logistic regression on ADJUST. (1) tests H3a & f; (2) tests H3b, c, & g; (3) tests H3d, e, & h. I limit analysis to observations where the BD changes auditors, present coefficients and p-values for each variable, cluster standard errors by audit firm and partner, and present two-tailed p-values. Refer to Appendix A for variable definitions. (1) shows a positive and significant relationship between ΔAUD_SIZE and ΔAUD_FEES%, but no evidence of a relationship with SPEC_PRED. (2) shows a positive and significant relationship between ΔAUD_HOURS% and both ΔAUD_FEES% and ΔAUD_SIZE, and a negative and significant relationship with SPEC_PRED. Finally, (3) shows a positive and moderately significant relationship between ADJUST and both ΔAUD_SIZE and ΔAUD_HOURS%, but no evidence of a direct effect on SPEC_PRED.