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ORIGINAL PAPER

The Gender Effects of Audit Partners on Audit Outcomes: Evidence of Rule 3211 Adoption

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Abstract
This paper investigates whether the impact of PCAOB Rule 3211 on the quality and cost of audit services differs between female and male audit partners. We find that the improvement of audit quality is more pronounced for female audit partners than male partners after Rule 3211 adoption. Female audit partners are also associated with higher increases in fees and report lags than male counterparts after the adoption of Rule 3211. Further, we find that the presence of female CFOs (or female audit committee members) attenuate the audit fees and report lag increases in the post-adoption periods. Overall, our findings confirm the importance of the gender effect on audit outcomes, which needs further consideration by standard setters. Our study also provides empirical evidence of the benefits of gender equality in the workplace.

Keywords Audit partner gender · Publication of auditor identity · Audit partner accountability · Audit quality · Audit fees · Audit efforts

Introduction

The adoption of Rule 3211 by the Public Company Accounting Oversight Board (PCAOB) has attracted attention from both the public and the academia. Specifically, Rule 3211 requires registered public accounting firms to disclose the information and the names of the audit engagement partners on Form AP. The main purpose of this identification disclosure is to increase the audit participants' sense of accountability and transparency (PCAOB 2015). The public disclosure of audit partner's identity could increase individual audit partner's professional care during the audit process and allows investors and audit committees to assess the individual partners' abilities and experiences. Such a noble intention of PCAOB is not fully supported without any doubts or opposition. The public accounting firms believe that the U.S. strict legal and regulatory environment left little room for individual partners to influence the audit outcomes (Basu and Shekhar 2019; Bedard et al. 2008). Rule 3211 could only lead to over-auditing without increases in audit quality because engagement partners have already held accountable.

This highly debated auditing regulatory change urges accounting researchers to investigate the audit outcome changes between before and after the adoption of Rule 3211. For example, Burke et al. (2019) find a significant increase in audit quality and audit fees and a significant decrease in audit delay in the post-adoption periods. However, Cunningham et al. (2019) find that the post-adoption audit quality improvement is not convincingly attributable to the adoption of Rule 3211, and the audit fee increase is limited to a specific control group. Given the heated debate among practitioners and the mixed findings in the literature, we re-examine this U.S. regulatory change using a different lens—gender.

There are two reasons that the audit partner's gender could be an important factor in explaining the post-adoption audit outcomes. First, based on the gender socialization view, females are socialized into communal values

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reflecting others' concerns (Mason and Mudrack 1996).[1] Specifically, females value interpersonal networks where they need to be responsible and accountable, while males tend to reason their way through moral dilemmas (Gilligan 1993). The adoption of Rule 3211 allows the public to trace audit failure to the individual partner. In these cases, female audit partners could feel more obligated to such negative public events and blame herself for her client's reputation damage, potentially affecting all of her other clients' reputation.[2] Second, gender inequality at the workplace influences female's cognitive makeups and behaviors. Women are usually evaluated based on their performance, while men are evaluated based on their potential (O'Connor 2006). Hence, females are promoted at a much slower rate than males at the workplace (Lennox and Wu 2018). The biased promotion mechanism impedes female's confidence and makes females become extremely careful and hardworking. Consequently, females who break the "glass ceilings" are well-trained and have higher abilities than average males (Hao et al. 2018). The side effect is that these females are left with little room to make mistakes, and thus, any negative events are magnified (Pillsbury et al. 1989; Anderson et al. 1994). Rule 3211 allows audit failures to become traceable mistakes that can follow the partners' careers permanently. Female partners who are given fewer opportunities become even more cautious about making such traceable mistakes that could leave a permanent dent on their resumes. Thus, they are more likely to be conservative and skeptical in the auditing process after the adoption of Rule 3211. Therefore, we hypothesize that female audit partners have more pronounced audit quality improvement after the adoption of Rule 3211 than male audit partners. To achieve better audit quality, female audit partners may exert more audit efforts and charge higher audit fees in the post-Rule 3211 periods.

Further, the client executive team and audit committee play vital roles in auditor selection, audit fee negotiation, and auditing process (Defond and Zhang 2014). However, the current auditing literature provides limited evidence on how the gender of both supply and demand sides of audit services affect audit quality. In our study, we strive to fill this knowledge gap by investigating how the interaction between female audit partners and female CFOs (or female committee members) modifies the female audit partners' responses to the adoption of Rule 3211. We believe that the answer to this question lies in whether females can work well together (i.e., the "female team" hypothesis). There are two opposing views on how females work together. The similarity-attraction paradigm suggests people trust and work well with people who have similar attributes (Berscheid and Walster 1969; Byrnee 1971). It is documented that female executives are associated with better financial reporting quality (Huang et al. 2014), and female committee members are associated with better internal monitoring and have better communication with external auditors than males (Schubert 2006; Parker et al. 2017). This suggests that female executives (or committee members) and female audit partners have commonalities in terms of skills, work ethics, and reporting quality standards. These commonalities may help them to build mutual trust and confidence in each other's work. As a result, female audit partners may alleviate some of their concerns and anxieties about the publication of their identities in the post-adoption period when they work with female CFOs (or committee members). In this case, we would expect the gender effects on the post-adoption audit outcomes are attenuated by the "female team" working together. However, researchers also propose the dissimilarity theory to interpret people's interactions. They suggest that powerful females' under-cover aggressions are mounted when they play different roles within a group (O'Connor 2006). Particularly, it is known that the management and external auditor experience a power battle during the auditing process (Gibbins et al. 2007). Hence, it is possible that female partners may psychologically withdraw from the complicated working relationship with female executives and lose confidence in the reporting quality supervised by female executives (or committee members). To protect their reputation and alleviate their career concerns, female audit partners may exert even more effort to ensure the post-adoption periods' audit quality. In this case, we would expect the gender effects on audit outcomes are exacerbated by female CFOs (or audit committee members).

We use Form AP filings in the Auditor Search database disclosed by the PCAOB to identify the name of audit partners. Then we hand-collected audit partner's gender information from LinkedIn. We develop our baseline model specification by comparing the change of audit quality, audit reporting lag, and audit fee surrounding Rule 3211 effective date between female and male audit partners. The sample companies have auditor signature dates between January 1, 2016, and December 31, 2017, and data coverage in Audit

[1] Gender socialization is a process that educates or instructs women and men to encompass a range of behaviors and attitudes that are generally considered acceptable, appropriate, or desirable for a person based on the person's biological or perceived sex. Gender socialization starts in childhood. Through interaction with people and exposure to society's values, children learn what sex is attributed to them and what roles they are expected to learn. Reinforcement (through rewarding gender-appropriate behavior and punishing what may seem as deviation behavior) socialize children into their genders (Witt 1997).

[2] Francis et al. (2017) find evidence of a contagion effect in reputation concern among clients of an auditor after the auditor experiences a loss of an important client. Further, Chen and Omer (2019) suggest that clients would migrate to a different audit office (not necessary in a different firm) if the current audit office suffers from high rates of audit failures.

Analytics and Compustat from fiscal years 2015 to 2017. We find that the improvement of audit quality between the pre- and post-adoption period is more pronounced for companies audited by female partners than by male partners. Specifically, the clients audited by female partners incur less earnings management than those audited by male partners (i.e., 0.036 reduction in the absolute value of discretionary accrual in the post-adoption periods). Meanwhile, the increases in audit fees between the pre- and post-adoption period are about 3.5% higher for female partners than male peers. Also, female audit partners are associated with a 1.4% higher audit delay than male partners in the post-adoption periods. We conclude that there is a gender effect on the adoption of Rule 3211. Further, considering the interaction between female audit partner and female executives (or female audit committee members), we find that the presences of female CFOs or audit committee members attenuate the gender effects on the increased audit fees and audit efforts, without compromising audit quality, in the post-adoption periods. This finding is consistent with the similarity-attraction theory.

In the current literature, many studies have documented that female auditors are associated with better audit quality and higher fees (Ittonen et al. 2013; Hardies et al. 2015; Hardies et al. 2018; Li et al. 2017; Burke et al. 2019; Lee et al. 2019). However, the literature rarely addresses the observed behavioral differences from the angle of gender inequality. The evidence collected so far vaguely attributes the observed audit outcome difference to the "intrinsic" differences between males and females. In this paper, we analyze the regulation reaction difference under the context of gender socialization and gender inequality. We infer that the audit outcome differences between female and male partners are mainly driven by females' increased psychological stress, which is caused by the reputation concern associated with the publication of their identities. Such symptom is highly associated with gender inequality and high glass ceilings in the workplace (Lennox and Wu 2018; Hardies et al. 2020).[3] Also, the finding that female partners' reactions are attenuated by the working relationships with female executives (or audit committee members) further supports our view that the observed behavior difference is psychological driven. Hence, this paper does not reiterate prior findings but captures the psychological profile difference that is caused by gender inequality in public accounting firms. We hope to inspire future research to delve more into gender-related governance issues in the audit firms, such as gender pay gap, promotions, and punishment mechanisms to further our understanding of gender issues in public accounting.

Moreover, this paper furthers our understanding of the effect of Rule 3211 on the audit process. Although prior studies (Burke et al. 2019; Cunningham et al. 2019) discover a positive association between the passage of Rule 3211 and audit quality, they stress that the finding is highly circumstantial. Our paper presents robust evidence that the observed audit outcome differences are mainly attributable to female partners rather than males. This finding informs regulators that the gender effect not only exists but also plays an important role in fulfilling regulatory purposes. To avoid the unequal applications between females and males, standard setters need to pay attention to gender inequality and make efforts to close the psychological and behavior gap between male and female auditors.

Last, the finding that "female teams" attenuate the gender effects on post-adoption audit outcomes suggests that successful females work well together and create desirable results in a time of stress and change. This finding highlights the benefits of gender equality in the workplace. The quality of financial reporting and assurance services would be improved greatly if more women of all backgrounds are given the opportunities to hold senior positions in both private and public accounting. Hence, supporting women to dismantle career barriers, electing women, and giving women opportunities to grow into leadership roles are more important and urgent than ever.

The rest of the study proceeds as follows: Sect. 2 presents the literature review and hypotheses development. Section 3 discusses the research design. Section 4 discusses the sample selection process and empirical results. Section 5 provides additional analyses, and Sect. 6 concludes.

Literature Review and Hypotheses Development

PCAOB Rule 3211 Debate

The intention of Rule 3211 is to enhance partner accountability and improve audit process transparency (PCAOB 2015).[4] Public identification of audit partners will

[3] A 2018 survey by the Accounting and Finance Women's Alliance shows that while women are 51% of associate-level staff at U.S. CPA firms, they only make up 24% of partners and principals positions. This may suggest that the corporate power ladder is un-proportional between females and males. https://www.afwa.org/wp-content/uploads/2019/06/2019-accounting-MOVE-report.pdf.

[4] There is a long history of the PCAOB proposing to publicly disclose audit partners' identification. In early 2009, the board started to consider the requirement of engagement partner signatures and issued Concept Release on requiring the engagement partners to sign the audit reports with the intention to improve audit quality (PCAOB 2009). The reasons for this requirement are to increase the engagement partner's own sense of accountability and to increase the audit process transparency. In 2011, the PCAOB further released a proposal and proposed registered firms to disclose the names of the audit partners on Form 2 (PCAOB 2011). In 2015, the PCAOB approved the final audit partner identification requirement—Rule 3211, which

presumably motivate audit partners to increase professional care and avoid negative consequence associated with audit failures. Responding to greater personal accountability, audit partners could act more conservatively by curtailing aggressive earnings management (Kim et al. 2003). To avoid potential audit failures, audit partners could also perform more work by extending or changing the nature of the audit procedure (Carcello and Santore 2015). More importantly, public identification of partners increases the audit procedure transparency. It allows audit clients and stakeholders to track a partner's performance and his/her negative regulatory and legal outcomes. Such information availability is useful to evaluate the audit partner's audit quality and career development. In fact, the PCAOB chairman stated that "the growing database on engagement partners will allow investors and audit committees to develop a better understanding of the partners' experience and abilities".[5] Inherently, the PCAOB believes that audit quality varies across individual audit partners and it is important to inform the public partners' performance by developing a tracking system. The starting point is the requirement of Form AP filing.

However, in the practice, the noble intention of the PCAOB is strongly opposed by public accounting firms. These audit firms campaigned against this disclosure requirement and argued that the current accountability mechanisms over audit partners are already substantial and exhausting.[6] The strict legal and regulatory environment of the U.S. makes audit partners highly aware of their personal responsibilities to audit clients (Reid and Youngman 2017). Plus, U.S. audit firms have strong quality control mechanisms that could constrain the ability of partners to influence individual engagement (Basu and Shekhar 2019; Bedard et al. 2008). As such, public accounting firms believe partners are already held accountable within their firm, and thus, their individual characteristics would not influence the audit outcomes. To resolve the debate over the necessity of public disclosure of audit partners, it is important to understand whether individual partners can influence the audit outcomes.

Individual Partners and Audit Quality

Although prior literature assumes the homogeneity of audit partners' influence on audit outcomes, recent studies suggest that individual partners have a significant influence on audit engagements and audit quality. For example, Gul et al. (2013) employ the individual partner fixed effects approach and find that about 7% to 34% of audit quality, depending on the measurements, can be explained by the individual partner fixed effects. Meanwhile, there are growing interests in identifying the partner's personal characteristics in explaining audit quality. For example, several studies find that partners' past working experience and industry expertise are significantly associated with audit quality (Knechel et al. 2015; Chin and Chi 2009; Chi and Chin 2011). These studies suggest that partners with more experience and expertise can generally deliver higher audit quality. Also, partners' age, education background, and gender have significant explanation power on audit outcomes (Sundgren and Svanström 2014; Chu, Florou, and Pope 2016; Ittonen et al. 2013).

Moreover, several studies suggest that individual auditors play crucial roles in detecting frauds to ensure audit quality. Blay et al. (2007), using proprietary audit file data, find that an auditor's assessment of a client's fraud risk can affect the quality of audit evidence as well as the timing of evidence. Specifically, they find that the auditor will collect more independent audit evidence as well as collect them earlier during the interim audits if the auditor deems the client to have higher fraud risk. Further, Wilks and Zimbelman (2003) find that how auditors conduct fraud risk assessment can impact the quality of their work in subsequent processes. They show that individual auditors who decompose fraud risk following the fraud triangle are more sensitive to red-flag cues in subsequent procedures. Bernardi (1994) and Knapp and Knapp (2001) suggest that personal experience also plays an important role in assessing fraud risk. Specifically, auditors with more accumulated experience are more efficient in detecting fraud risk with analytical procedures.

Although detecting fraud is one of the essential responsibilities for audit partners, financial frauds are hard to capture because companies often do not admit to fraud allegations and often treat the financial irregularities as misstatements (Dechow et al. 2011). Thus, several studies investigate the direct association between audit partners' abilities and financial misstatements. Wang et al. (2015), using Chinese data, find that audit partners with more audit failures are more likely to have future misstatements. Laurion et al. (2017) find that new rotate-in partners have higher rates of misstatement discovery than the old partners, suggesting that new partners may provide a fresh look at the engagement.

Although much has been studied about the impact of individual partners on audit quality, the current literature remains understudied in the U.S. because of data limitations

Footnote 4 (continued)

requires registered public accounting firms to disclose the audit partner's name and information on Form AP. The form needs to be filed within 35 days after the date that the auditor's report is filed with the SEC.

[5] See https://pcaobus.org/News/Speech/Pages/initiatives-bolster-investor-trust-in-audit-12-4-17.aspx.

[6] Current accountability mechanisms include partner rotation, partner compensation, internal firm quality control review, peer review, potential inspection and regulatory sanction by SEC and PCAOB, and civil litigation (Basu and Shekhar 2019).

(Lennox and Wu 2018). The adoption of Rule 3211 provides great opportunities for researchers to explore the effect of partners' personal characteristics on audit outcomes. In this paper, we expect that the audit partner's gender, an important personal characteristic, offers an interesting perspective of how individual partners can influence the audit process.

Gender Effects on the Disclosure Requirement—Rule 3211

Researchers have a longstanding interest in understanding how an individual's judgments and behavior are linked to his/her gender. Prior studies present substantial evidence that women, in general, hold different values and ethical views than men, so they behave and judge differently than men. For instance, females dislike opportunistic behaviors, have a higher expectation regarding their responsibility, have lower risk tolerance, and are more diligent and ethical than males (Srinidhi et al. 2011; Krishnan and Parson 2008; Ruegger and King 1992; Betz et al. 1989; Fondas and Sasslos 2000; Byrnes et al. 1999; Peni and Vähämaa 2010; Carter et al. 2017; Bonner 2008; Adams and Ferreira 2009; Gul et al. 2011).[7]

These gender behavior differences are primarily attributed to differences in socialization.[8] Based on the gender socialization view, women are often socialized into communal values that highlights a concern for others, selflessness, to be at one with others; men are usually socialized into agentic values, such as self-expansion, self-assertion, competence, and mastery (Eagly 1997; Mason and Mudrack 1996). These differences in social values drive men and women to have different perceptions of themselves, others, and situations, and to resolve moral dilemmas (Mason and Mudrack 1996). Women value interpersonal networks where they need to be responsible and accountable to maintain the network of relationships, while men tend to reason their way through moral dilemmas, referring to the hierarchy of rights and attempting to be fair (Gilligan 1982; Huston 1983). Based on this view, when a female audit partner faces an audit failure, her mistake is going to be known by all of her clients due to the passage of Rule 3211. She is more likely to feel obligated for such a failure and blame herself. Especially, one client's reputation damage can potentially affect all of her other clients' reputation (Francis et al. 2017; Chen and Omer 2019). On the contrary, a male partner may treat the situation as an individual client based and try to argue his way out by attrition the failure to the client rather than themselves. Therefore, the publication of audit partners' identity gives psychological pressure to female partners, who are socialized into communal values, to exert more professional care to compensate for the potential reputation damage. In line with gender socialization theory, we believe female audit partners are associated with higher audit quality than their male counterparts in response to the adoption of Rule 3211.

Further, gender stereotype at work, a result of gender socialization, influences women's cognitive makeups to impede female auditors' success to escalate to leadership roles (O'Connor 2006). For example, Lennox and Wu (2018) suggest that the gender effect on audit quality could be explained by the fact that audit firms discriminate against females. Men are usually evaluated based on their "potential" while women are evaluated on their performance. The net result of this bias is that women get promoted at a much slower rate than men. Women, therefore, believe that only hard work and talent are things that they can count on to climb up the ladder, whereas men are better at marketing themselves to have their supervisors to believe in their potentials. Hence, female audit partners, on average, must be "better" than the average male partners to break the "glass ceiling" to be promoted to the partner rank (Pillsbury et al. 1989; Anderson et al. 1994). Females who made the partner ranks are exceptionally capable. However, the side effects are that these females are expected to be "perfect" and have little room to make mistakes. Rule 3211 allows audit failures to become personal failures. These traceable mistakes, such as a PCAOB sanction or a lawsuit, can follow the partners' careers permanently and jeopardize future engagement opportunities and client relationships. Therefore, female partners who are given fewer opportunities and pardoned less become even more cautious about making such traceable mistakes that could leave a permanent dent on their resumes. In response to the public identification rule, female partners may become extra cautious about the potential career risks and require a higher level of quality assurance. Given the gender-related characteristics, we expect a higher audit quality in the case of female auditors in the post rule adoption period. We propose:

[7] In the auditing literature, researchers have established the role of audit partner gender in determining audit outcomes. For example, Hossain et al. (2018), using Australian setting, find that female audit partners are more likely to issue going-concern audit opinions to financially distressed clients. Ittonen et al. (2013) and Garcia-Blandon et al. (2019)both find that clients of female audit partners have lower levels of discretionary accruals than clients of male audit partners. Similarly, Ittonen and Peni (2012), using a sample of companies from three Nordic countries, find that female audit partners charge higher audit fees than their male counterparts. These studies arrive at their findings after controlling for important determinants of audit quality and audit fees such as client characteristics and financial health, auditor change, the inclusion of non-audit services, auditor tenure, etc.; suggesting that the audit partner gender effect on audit outcomes is robust.

[8] Gender socialization is a process of educating and instructing males and females as to the norms, behaviors, values, and belief of group members as men or women.

H1 Female audit partners have more pronounced audit quality improvement after the adoption of Rule 3211 than male audit partners.

To strengthen our argument regarding female audit partners' reaction to Rule 3211, we further examine the gender effect on audit fees and audit delay. Prior studies such as Simunic (1980), Palmrose (1988), Whisenant et al. (2003), Defond and Zhang (2014), and Zhang (2018) suggest that audit fees are a function of audit efforts and may even infer audit quality as audit fees capture the level of resources that auditors invest in conducting the audits. Since female audit partners are more motivated to provide a higher level of audit assurance, they would exert more efforts with a higher level of skepticism during the audits than their male counterparts. Thus, we expect that female audit partners increase more audit fees than male audit partners in the post-Rule 3211 periods.

Similarly, prior studies in auditing literature expect audit delay (also referred as audit report lags), along with audit fees, to measure the auditor's audit effort (Ettredge et al. 2006; Hoitash and Hoitash 2018; Zhang 2018; Bailey et al. 2018; Cao et al. 2020). The heightened reputation risks due to Rule 3211 may motivate female audit partners to conduct more audit procedures to improve audit quality, which would result in longer audits. Hence, we expect that clients audited by female audit partners would experience a higher increase in audit delay than clients audited by male audit partners.[9]

The "Female Team" and the Post-adoption Audit Outcomes

The quality of audit service is multi-faced and is not solely affected by auditors but also the clients' management and corporate governance structure.[10] CFOs are the main executives who make decisions that affect financial reporting, and thus, auditors should frequently communicate with CFOs during the audits. Hence, the audit outcomes are influenced by both audit partners and client executives. As such, to better understand the gender effects on the audit outcomes, it is important to consider the interaction among female audit partners and female CFOs. However, prior gender-based auditing research rarely discusses female participants as a group but an individual. This approach fails to render a complete picture of the gender effects on the auditing process. In this study, we attempt to fill this knowledge gap by viewing female audit partners and female CFOs as a "female team". We investigate whether female audit partners can work well with female executives and whether such interaction can result in better audit outcomes.

We are motivated to discuss this "female team" working relationship from different perspectives. First, the similarity-attraction paradigm provides a reasonable explanation that female audit partners can work well with female executives because of their similarities in terms of attributes, personality, psychological characteristics, and social behavior. On the other hand, the social dissimilarity theory suggests that powerful females may not work well because the power competition is stronger within the female team. Each theory predicts different empirical results in terms of how the "female team" reacts to the adoption of rule 3211. Hence, we want to elaborate on both theories and conjecture our empirical prediction based on each theory.

The similarity-attraction theory posits that people like and are attracted to others who are similar (Berscheid and Walster 1969; Byrnee 1971). In auditing literature, Lee et al. (2019) find firms with gender-diverse top management teams and boards are more likely to have a female lead partner because that individual prefers to interact with others who have similar attributes, such as gender (Ibarra 1992). Also, prior literature finds that females executives (CFOs and CEOs) are associated with better reporting quality and internal control mechanisms (Liao et al. 2019; Krishnan and Parsons 2008; Srinidhi et al. 2011; Zalata et al. 2018). Female audit partners, who share similar personality and psychological characteristics, are more likely to trust the financial statements prepared by female executives. Thus, the presence of female executives can reduce female audit partners' needs for extra audit procedures after the adoption of Rule 3211. Further, females are better at communicating and have a comparative advantage over males in a task where communication among the different groups is required (Wood et al.1985; O'Donnell and Johnson 2001). This suggests that female executives, who are better at communication in a complex auditing process, can reduce the learning curves and unnecessary audit efforts. Therefore, the similarity in terms of skills, psychological attributes, and work ethic, female executives may alleviate female partners' concerns on heightened reputational and career risks caused by the rule 3211. As such, we predict that, without compromising the audit quality, the "female team" attenuates the enhanced audit fees and efforts associated with female audit partners after the adoption.

On the other hand, social psychology literature suggests that the relationship between high power females may not be a similar/attraction situation but a dissimilarity dynamic. This dissimilarity dynamic can impede mutual trust and

[9] While audit delay is commonly used as a proxy for audit effort, it may potentially reflect inefficient time management, prior studies often conduct audit delay test along with audit fees test and interpret the findings jointly. If the results of both tests are consistent, we can draw a more definitive conclusion regarding audit effort.

[10] PCAOB Auditing Standard 1301 (PCAOB 2012) requires that auditors communicate with the client's audit committee regarding matters related to an audit.

understanding and challenge social interaction in a professional relationship. First, there is a power struggle between the roles of two females play: auditors and executives. It is well-documented in the accounting literature that there is a power clitch between executives and auditors (Gibbins et al. 2007). Such a power clitch does not necessarily result in a negative situation. In the current study, it may lead to positive outcomes—reduced audit fees and potentially better auditing quality. Further, high power female often needs to play complicated gender games to make progress in their career. On the one hand, they need to be strong and capable of handling obstacles and difficulties at work. On the other hand, they need to act "friendly, cooperative confidence, but nonconfrontational" to be acceptable. Thus, social psychologists conclude that females are socialized to "be nice", but this is a form of undercover aggression (O'Connor 2006). Such undercover aggressions are more likely shown within the "female team". The complicated power competition may make females partners inhibit themselves from trusting or withdraw from women executives. At the same time, female partners may favor dealing with male executives because such associations are more transparent. In relationships with female executives, the issues of power competition become stronger and more complicated. Specifically, a powerful female executive, who believes her financial statements have already been prepared under a high-quality standard, may disagree with extra auditing procedures performed due to the audit partner's psychological pressure in the post-rule 3211 periods. At the same time, female audit partners may take the resistance as signals of low reporting quality and insist on performing extra procedures to ensure audit quality. Therefore, during the audit fee negotiation process, female audit partners want to charge higher audit fees to compensate for extra efforts, but female executives may refuse to pay additional audit fees. Such a power battle between two female professionals may result in better audit quality and more efforts, but no fee change in the post-adoption periods. Due to the exploratory nature of the research question, we state our H2 as follows:

H2 The CFO's gender does not modify the audit outcome differences between female and male audit partners after the adoption of Rule 3211.

Besides investigating the interaction between female partners with female executives, we also want to incorporate the corporate governance aspect into our discussion. Hence, we investigate whether the interactions between female partners and female audit committee members can also modify the post-adoption periods' audit outcomes. Prior literature suggests that female audit committee chairs or members are associated with better internal monitoring mechanisms (Lai et al. 2017; Parker et al.), lower audit risks (Ittonen et al. 2013; Huang et al. 2014), and better audit quality (Abbasi et al. 2020). Based on the similarity-attraction theory, female audit partners and female audit committee chairs/ members have similar psychological attributes, social behaviors, and ethical standards, and thus, they should work well together and trust each other. Such positive relationships can alleviate female partners' reputational concerns associated with rule 3211. Consequently, clients with females on the audit committees would experience attenuation in increases of audit fees and efforts that would otherwise be added if the clients are audited by female partners. Due to no increase in audit efforts, we do not expect audit quality change in the post-adoption periods. On the contrary, from the view of dissimilarity theory, we draw a similar prediction as H2 that female audit committee members may not work well with female audit partners due to exacerbated power competition. Empirically, we expect opposite results from the similarity-attraction view: the clients with female audit committee members and audited by female partners may experience audit quality and effort increases without fee increases in the post-adoption periods.

Research Design

Models for H1

We begin the sample with all audit opinions issued by the U.S. audit firms over the year of 2016–2017. Since the PCAOB publishes engagement partners' names for each of their engagement after January 31st, 2017, we create a *POST* indicator variable to identify all opinions issued after the adoption date. To identify the gender of audit partners, we hand collected partners' information from LinkedIn to match with the PCAOB engagement partner dataset. We create a *FEMALE* indicator to identify partners who are females. To test whether female audit partners have better audit quality than male partners after the adoption of Rule 3211, we estimate the following equation:

$$\begin{aligned} AUDIT\_QUALITY_{it} = {} & a1 + a2FEMALE_{it} + a3POST_{t} + \boldsymbol{a4\,POST_{t}} \\ & * \boldsymbol{FEMALE_{it}} + CONTROLS_{it} \\ & + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \quad (1)$$

In Eq. (1), we use two discretionary accrual measures to proxy for the audit quality. The first measure is the absolute value of discretionary accrual (*DACC_ABS*) calculated by following Ball and Shivakumar's (2006) model. The second measure is the absolute value of discretionary accrual (*JONES_1995_ABS*) calculated by following the modified Jones model as estimated by Dechow et al. (1995). The absolute discretionary accrual measures are widely used in auditing literature as audit quality outcomes. Auditing

researchers often use discretionary accruals to detect opportunistic earnings management. The assumption here is that high-quality auditing would constrain management's opportunistic reporting behavior, and thus reducing earnings management (Defond and Zhang 2014). Accordingly, a decrease in discretionary accruals, i.e. lower level of earnings management, infers an improvement in audit quality.

In this study, we follow the difference-in-differences design to construct our models. The difference-in-differences is a quasi-experimental design that is commonly employed in empirical social science research. This method is used to estimate the effect of a treatment event (such as adoption of new rules, passage of laws, etc.) by comparing the changes in outcome overtime between a treatment group and a control group. In this study, we strive to estimate the effect of the adoption of Rule 3211 on the behaviors of female audit partners and male audit partners. We treat the adoption of Rule 3211 as the treatment event, female audit partners as our treatment group, and male audit partners as the control group. The interaction between female audit partner identifier (*FEMALE*) and the event identifier (*POST*) indicates the differences in the changes in audit quality overtime between female and male audit partners. This is our variable of interest. Accordingly, in Eq. (1), a negative coefficient for *a4* suggests that the earnings management decreases following the adoption of Rule 3211 are more pronounced for clients of female audit partners than for clients of male audit partners, which infers that audit quality improvement in the post-adoption period is higher for female audit partners than for male audit partners.

We control for a comprehensive set of control variables. Prior literature has identified several determinants factors for audit outcomes. First, Simunic (1980) suggests that the complexity of clients' operation play an important role in planning and pricing the audits, we, thus, control for clients' size (*LNASSETS*), number of business segments (*BUSSEG*), number of geographic segments (*GEOSEG*) and number of business segments overseas (*FORNSEG*). Following the suggestion of Becker et al. (1998) and Velury and Jenkins (2006) to control for clients' endogenous accruals generating ability, we include total accruals (*TA*) in our model. The financial conditions of the clients are also important determinants of audit quality as it may influence clients' incentives and competence to maintain financial reporting quality (Defond and Zhang 2014). To control for clients' financial conditions, we include several factors including loss client-year observation dummy (*LOSS*), clients' operating cash flow level (*CASHFLOW*) (Simunic 1980; Defond and Zhang 2014).

Accounting Standard AS 2401-Consideration of Fraud in a Financial Statement Audit states that the auditor has the responsibility to detect frauds. The auditor's failure to detect frauds can lead to severe impairment of audit quality. Consistent with this notion, Blay et al. (2007) show that fraud risk is significantly associated with the risk of financial misstatements. Similarly, Ettredge et al. (2010) find that clients that have misstatements, either by errors or fraud, sustain high levels of earnings management. In the similar vein of research, several studies directly use the fraud risk as a measure of audit quality (Carcello and Nagy 2004; Cunningham et al. 2019; Ege 2015, etc.). Collectively, these studies point to the notion that the financial reporting fraud has a significant impact on audit quality. Dechow et al. (2011) suggest that frauds are hard to capture because companies often do not admit to fraud allegations and often treat the financial irregularities as misstatements. Following Dechow et al.'s (2011) suggestion, we control for whether the client's financial statements are misstated in year *t* to take into consideration the impact of fraud risk on audit quality.

Because Beneish (1999) suggests that clients' leverage and growth are associated with the risk of financial statements being misstated, we include clients' leverage ratio (*LEV)*, market to book ratio (*MTB*), and sales growth (*SALE_GRW*) in our models. Simunic (1980) suggests that account receivables and inventory are risky balance sheet items that may affect the planning of the audits. Thus, we control for these two factors (*AR* and *INV*) in our models. The duration of the relationship between the auditor and the client may greatly impact audit quality. A long relationship with a client may induce the auditor to identify with the client and thus may be more likely to acquiesce with the client's demand (Bamber and Iyer 2007). Because of the possible impact of auditor tenure on auditor integrity and competence, we control for audit firm tenure (*TENURE*). Another factor that may impact the auditor's integrity is the competitive position in the audit market. An auditor with a weak competitive position may have a greater incentive to compromise audit quality (Newton et al. 2013; Francis et al. 2013). Thus, we control for the audit firm competitive position (*COMPETITION)* following Numan and Willekens (2012). Last, prior studies raise concerns that the non-audit services provisions may impair auditor independence (Firth 1997; Ashbaugh et al. 2003; Krishnan et al. 2005; Ashbaugh 2004). Therefore, we control for the natural log of non-audit fees that the auditor charges the incumbent client (*LNNONAUDITFEES*).

We also control for a set of variables that account for partners' individual characteristics. Che et al. (2018) find that the education level and experience of audit partners influence the level of audit efforts that auditors exert. They find that audit partners with a master's degree and have more working experience would plan more audit hours for the engagements. Thus, we control for variables indicating whether the partner has a master's degree (*MASTER_DUM*), the number of employers the partner has worked for (*NUM_EMPLOYER*), and the number of social connections that a

partner has on LinkedIn (*NUM_CONNECT*). Because all of our dependent variables are right censoring, i.e. all variables have non-negative values, we use Tobit regressions for all of our models.[11] All models include audit firm fixed effects and cluster standard errors by the audit firm.

To provide a comprehensive picture of the gender effects on audit outcomes, we further test whether female audit partners are associated with higher audit fees and more audit efforts (proxied by audit delay) than male partners after the adoption of Rule 3211. We estimate the following equations:

We include several control variables used in the audit quality model and include additional model specific control variables where necessary. Following prior studies (Whisenant et al.2003 ; Defond and Zhang 2014; Burke et al. 2019), we add a dummy variable indicating whether the client is an accelerated filer (*AFILER*), a dummy variable indicating whether the client fiscal year end aligns with the auditor busy season (*BUSY*), a dummy variable indicating whether client issue any new long-term financing during the fiscal year *t* (*NEWFIN*), and dummy variables indicating whether the client receives a going concern opinion (*GC*) and whether the client receives material internal control weakness (*ICW*) during fiscal year *t*.

$$LNAUDIT\_FEES_{it} = b1 + b2\ FEMALE_{it} + b3\ POST_{i} + \boldsymbol{b4\ POST_{t} * FEMALE_{it}} + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \quad (2)$$

$$REPORTLAG_{it} = c1 + c2\ FEMALE_{it} + c3\ POST_{i} + \boldsymbol{c4\ POST_{t} * FEMALE_{it}} + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \quad (3)$$

In Eq. (2), we measure audit fees by taking the natural log of the audit fee variable (*LNAUDIT_FEES*) reported in the Audit Analytics database. A positive coefficient for *b4* suggests that audit fee changes following the adoption of Rule 3211 for female auditors are more than the audit fee changes over the same period for male partners.

In Eq. (3), we measure audit report lag by taking the natural log of the number of days between clients' fiscal year-end date and audit report date. A positive coefficient for *c4* suggests that the audit report lags changes following the adoption of Rule 3211 for female audit partners is more than the changes of audit report lags over the same period for male partners.

Models for H2

As discussed in H2, the similarity-attraction paradigm predicts that the "female team" is associated with no significant audit quality changes but with a reduction in audit fees and efforts in the post-adoption periods. On the contrary, the dissimilarity (power competition) argument suggests that the "female team" is associated with significant audit quality improvement and audit efforts without audit fee increases. Thus, to test whether the interaction between female CFOs and female audit partners attenuates or exacerbate the gender effects on audit outcomes, we estimate Eqs. (5), (6), and (7):

$$\begin{aligned} AUDIT\_QUALITY_{it} = {} & d1 + d2 * FEMALE_{it} + d3 * FECFO_{it} \\ & + d4 * POST_{t} + d5 * FEMALE_{it} * FECFO_{it} \\ & + d6 * FEMALE_{it} * POST_{t} + d7 * FECFO_{\mathrm{it}} * POST_{t} \\ & + \boldsymbol{d8 * FEMALE_{it} * FECFO_{it} * POST_{t}} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \quad (4)$$

$$\begin{aligned} AUDIT\_QUALITY_{it} = {} & d1 + d2 * FEMALE_{it} + d3 * FECFO_{it} \\ & + d4 * POST_{t} + d5 * FEMALE_{it} * FECFO_{it} \\ & + d6 * FEMALE_{it} * POST_{t} + d7 * FECFO_{\mathrm{it}} * POST_{t} \\ & + \boldsymbol{d8 * FEMALE_{it} * FECFO_{it} * POST_{t}} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \quad (5)$$

[11] Results using OLS models are consistent with the main results.

$$\begin{aligned} LNAUDIT\_FEES_{it} = {} & e1 + e2 * FEMALE_{it} + e3 * FECFO_{it} + e4 * POST_t \\ & + e5 * FEMALEit * FECFO_{it} + e6 * FEMALE_{it} * POST_t \\ & + e7 * FECFO_{it} * POST_t + \boldsymbol{e8 * FEMALE_{it} * FECFO_{it} * POST_t} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \tag{6}$$

$$\begin{aligned} REPORTLAG_{it} = {} & f1 + f2\, FEMALE_{it} + f3\, FECFO_{it} + f4\, POST_t \\ & + f5\, FEMALE_{it} * FECFO_{it} + f6\, FEMALE_{it} * POST_t \\ & + f7\, FECFO_{it} * POST_t + \boldsymbol{f8\, FEMALE_{it} * FECFO_{it} * POST_t} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \tag{7}$$

In Eqs. (5), (6), and (7), *FECFO* is an indicator variable that equals one when the audit client has a female CFO, zero otherwise. The variable of interest is coefficient d8, e8, and f8, which represent the interaction between female audit partner (*FEMALE*) and female CFO (*FECFO*) in the post-adoption period (*POST*).[12] Coefficient d8, e8, and f8 measure the female team's modifying effect on the changes of audit quality, fees, and efforts in response to Rule 3211. Significantly negative e8 and f8 with insignificant d8 would support the similarity-attraction theory that female CFOs and female audit partners work well together. Such similarity and trusts can alleviate female auditors' risk concerns, resulting in the reduction in the supposed increased audit efforts and fees in the post-adoption periods. At the same time, there is no significant change in the audit quality in the post-adoption period. On the contrary, significantly positive f8 and d8 with insignificant e8 would support the dissimilarity (power competition) argument that females' undercover aggression exacerbates the existing power battle between CFOs and audit partners, resulting in deepened mistrusts. As such, female audit partners are triggered to perform more procedures and efforts when they work with female CFOs. At the same time, female CFOs refuse to pay higher audit fees arising from female partners' "unnecessary" audit efforts (Ittonen, Miettinen, and Vahamaa 2010).

Additional test for H2

To carry out the empirical testing of the impact of the female audit partners and female audit committee members' interactions on audit outcomes, we use the following equations to capture female teams' modifying effects on post-adoption audit outcomes:

$$\begin{aligned} AUDIT\_QUALITY_{it} = {} & g1 + g2\, FEMALE_{it} + g3\, FEAC_{it} + g4 POST_t \\ & + g5\, FEMALE_i * FEAC_{it} * POST_t + g6\, FEMALE_{it*} POST_t \\ & + g7 FEAC_{it} * POST_t + \boldsymbol{g8\, FEMALE_{it} * FEAC_{it} * POST_t} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \tag{8}$$

$$\begin{aligned} LNAUDIT\_FEES_{it} = {} & h1 + h2 FEMALE_{it} + h3\, FEAC_{it} + h4 POST_t \\ & + h5\, FEMALE_{it} * FEAC_{it} * POST_t + h6\, FEMALE_{it*} + POST_t \\ & + h7\, FEAC_{it} * POST_t + \boldsymbol{h8 * FEMALE_{it} * FEAC_{it} * POST_t} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \tag{9}$$

[12] We control for power dynamics between CFO and audit partner by including the variable CFO_POWER. CFO_POWER is calculated based on CFO pay slice—a ratio of the total compensation of the CFO scaled by the aggregated compensation of the top-five executives. This measure reflects the relative importance of the CFO as well as the extent to which the CFO is able to extract rents (Bebchuk et al. 2011; Cheng et al. 2015).

Table 1 Sample selection

	Main sample
Audit opinions and audit fees data from Audit Analytics with a signature date after January 31st, 2017 to December 31st, 2017	19,509
Less: Missing Compustat identifier	− 7359
Less: Missing engagement partner data	− 2600
Initial Sample	9550
Less: Missing data for variables in audit quality, audit fee, or report lag models	− 4301
Less: Missing data for variables in female audit partners and female CFOs interaction model	−2866
Sample with complete data for the audit outcome for H1 and H2	2383

$$\begin{aligned} REPORTLAG_{it} = & k1 + k2FEMALE_{it} + k3\,FEAC_{it} + k4POST_t \\ & + k5\,FEMALE_{it} * FEAC_{it} * POST_t + k6\,FEMALE_{it*} \\ & + POST_t + k7\,FEAC_{it} * POST_t + \boldsymbol{k8} * \boldsymbol{FEMALE_{it}} * \boldsymbol{FEAC_{it}} * \boldsymbol{POST_t} \\ & + CONTROLS_{it} + AUDIT\ FIRM\ FIXED\ EFFECTS + ERROR_{it} \end{aligned} \tag{10}$$

In Eq. (8), (9), and (10), we use two proxies (*FEAC%* and *FEAC_DUM*) to captures the presence of females on audit committees. *FEAC%* is the percentage of females on the audit committees. *FEAC_DUM* is an indicator variable set to one when the audit client has at least one female audit committee member, zero otherwise. The variables of interests are coefficients g8, h8, and k8, which capture the interactions between female audit partners (*FEMALE*) and female audit committee members (*FEAC)* in the post-adoption periods (*POST*). Significant negative h8 and k8 suggest that female teams attenuate the gender effects on post-adoption audit outcomes, supporting the similarity-attraction view. Significant positive coefficients on g8 and k8 suggest female teams exacerbate the gender effects on post-adoption audit outcomes, supporting the dissimilarity argument.

Data and Empirical Findings

Data and Descriptive Statistics

We collect audit partner names from the PCAOB website. Since this paper mainly focuses on the gender effect of audit outcomes, we then use LinkedIn pictures to identify the gender of the audit partners. We also collect information about audit partners' education background (*MASTER_DUM*), the number of connections they have in their LinkedIn profiles (*NUM_CONNECT*), and the number of employers they work for (*NUM_EMPLOYER*).

Details about the sample selection process are presented in Table 1. We start our sample construction by identifying 19,509 audit opinions with the signature date between January 1, 2016, and December 31, 2017. We next remove 7539 client-year observations with missing company identifier in Compustat. Because our analysis requires the PCAOB partner data, we remove 2,600 client year observations with missing audit partner identification. We then drop observations with missing necessary data for audit quality, audit fees, and audit report lag measures. Since the analyses to test H2 requires the CFO data from Execucomp, we further remove the observations with missing CFO information. We are left with 2383 client-year observations as the final sample to test both H1 and H2. For the additional audit committee tests, we drop observations missing female audit committee member information from the ISS database, and the sample size is 1698 client-year observations.

Table 2 shows the sample statistics. About 16 percent of engagement partners are females, and 21 percent of them have master's degrees. Each engagement partner works for about 1.5 firms in his/her career. They have 398 social connections on average. For H2, the presence of female CFO is 10.5%. The statistics of audit outcome variables are consistent with prior studies. For example, the mean of logged audit fees is 14.6, relatively similar to that in Barua et al. (2019). On average, the (non-logged) report lag duration is around 55 days (i.e., *REPORTLAG* = 4), consistent with Habib et al. (2019). Our mean of absolute discretionary accruals ranging from 0.06 to 0.08, relatively similar to Cunningham et al. (2019). Table 3 reports Pearson correlations for all variables used in the analysis.

Table 2 Descriptive statistics

Variable	N	Mean	SD	p25	p50	p75
Main variables						
FEMALE	2383	0.1603	0.3670	0.0000	0.0000	0.0000
POST	2383	0.4771	0.4996	0.0000	0.0000	1.0000
DACC_ABS	2383	0.0604	0.0787	0.0163	0.0374	0.0729
JONES_1995_ABS	2383	0.0753	0.0971	0.0197	0.0443	0.0911
LNAUDIT_FEES	2383	14.6734	0.9878	14.0058	14.6060	15.3470
REPORTLAG	2383	4.0008	0.1810	3.9120	4.0073	4.0775
FECFO	2383	0.1045	0.3060	0.0000	0.0000	0.0000
FEAC%	1965	0.1799	0.1858	0.0000	0.2000	0.3333
FEAC_DUM	1965	0.5539	0.4972	0.0000	1.0000	1.0000
Control variables						
AFILER	2383	0.9924	0.0866	1.0000	1.0000	1.0000
AR	2383	0.1267	0.1140	0.0468	0.1032	0.1641
AUDIT_TENURE	2383	6.6446	4.7217	3.0000	6.0000	10.0000
BUSSEG	2383	6.1993	4.4059	3.0000	5.0000	9.0000
BUSY	2383	0.7646	0.4243	1.0000	1.0000	1.0000
CASHFLOW	2383	5.5172	1.6526	4.4543	5.4790	6.6090
CFO_POWER	2383	0.1727	0.0757	0.1329	0.1603	0.1965
COMPETITION	2383	0.2793	0.2930	0.0436	0.1524	0.4650
FORNSEG	2383	5.0495	7.0182	0.0000	3.0000	7.0000
GEOSEG	2383	7.5044	7.8868	2.0000	6.0000	10.0000
GC	2383	0.0034	0.0579	0.0000	0.0000	0.0000
ICW	2383	0.0453	0.2081	0.0000	0.0000	0.0000
INV	2383	0.0849	0.1124	0.0000	0.0426	0.1281
LEV	2383	0.2733	0.2137	0.1050	0.2589	0.3972
LNNONAUDITFEES	2383	11.7022	3.7634	11.1417	12.6357	13.7781
LNASSETS	2383	7.9883	1.6234	6.8804	7.8614	9.0039
LOSS	2383	0.1788	0.3832	0.0000	0.0000	0.0000
MISSTATE	2383	0.0592	0.2360	0.0000	0.0000	0.0000
MTB	2383	3.3705	9.3713	1.5338	2.4640	4.2185
NEWFIN	2383	0.4421	0.4967	0.0000	0.0000	1.0000
SALE_GRW	2383	0.0627	0.3658	-0.0442	0.0308	0.1106
TA	2383	-0.0667	0.0890	-0.0885	-0.0518	-0.0272
Audit partner characteristics variables						
NUM_CONNECT	2383	397.7516	147.0062	320.0000	500.0000	500.0000
MASTER_DUM	2383	0.2081	0.4061	0.0000	0.0000	0.0000
NUM_EMPLOYER	2383	1.4917	0.9258	1.0000	1.0000	2.0000

This table presents descriptive statistics for U.S. companies with available data for the audit outcome analyses in the period before and after mandatory partner identification in Form AP. All continuous variables are winsorized at the 1st and 99th percentile to mitigate the influence of outliers. Appendix A in Table 12 provides the variable definitions

Multivariate Results

H1 Results

We start our empirical analysis by investigating the effect of audit partner gender on the changes in audit quality following the adoption of Rule 3211 (H1). The result of this analysis is shown in Table 4. As mentioned earlier, we use two absolute values of the discretionary accruals to proxy for the audit quality. *DACC_ABS* constructed by following Ball and Shvakumar (2006) are the dependent variables in columns (1), (2), and (3), and *Jones_1995_ABS* constructed by

Table 3 Pearson correlation

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	*FEMALE*	1.00														
(2)	*POST*	0.00	1.00													
(3)	*DACC_ABS*	0.00	−0.08	1.00												
(4)	*JONES_1995_ABS*	0.02	−0.15	0.68	1.00											
(5)	*LNAUDIT_FEES*	0.01	0.04	−0.15	−0.11	1.00										
(6)	*REPORTLAG*	−0.04	0.00	0.07	0.06	−0.25	1.00									
(7)	*FECFO*	0.00	−0.01	−0.04	−0.04	0.04	−0.01	1.00								
(8)	*AFILER*	0.02	0.01	−0.18	−0.14	0.11	−0.09	0.03	1.00							
(9)	*AR*	−0.05	0.02	0.01	−0.05	0.04	0.08	0.01	−0.02	1.00						
(10)	*AUDIT_TENURE*	0.00	−0.02	−0.08	−0.04	0.13	−0.09	−0.01	0.03	−0.03	1.00					
(11)	*BUSSEG*	0.01	−0.29	−0.06	0.00	0.29	−0.06	0.01	0.05	0.04	0.07	1.00				
(12)	*BUSY*	0.02	0.15	0.06	0.12	−0.02	0.06	−0.01	−0.01	−0.03	−0.04	0.11	1.00			
(13)	*CFO_POWER*	−0.05	0.00	0.08	0.05	−0.19	0.06	−0.02	−0.13	0.02	−0.10	−0.07	0.03	1.00		
(14)	*FORNSEG*	−0.03	−0.15	0.00	0.04	0.26	−0.05	−0.01	0.01	0.07	0.04	0.11	−0.01	−0.03	1.00	
(15)	*GEOSEG*	−0.02	−0.20	0.00	0.04	0.26	−0.05	−0.01	0.01	0.04	0.04	0.10	0.01	−0.04	0.97	1.00
(16)	*GC*	−0.03	−0.01	0.22	0.20	−0.04	0.09	−0.02	−0.50	0.05	−0.01	−0.03	0.03	0.07	−0.01	−0.02
(17)	*ICW*	0.02	0.03	0.06	0.03	−0.02	0.29	0.00	−0.03	0.07	−0.04	−0.05	−0.01	0.01	0.00	−0.01
(18)	*INV*	−0.01	−0.05	−0.05	−0.04	−0.05	0.00	0.02	0.03	0.08	0.04	−0.01	−0.26	−0.06	0.07	0.10
(19)	*LEV*	0.02	0.03	−0.01	0.06	0.16	−0.04	−0.06	0.03	−0.19	−0.02	0.02	0.09	−0.05	−0.07	−0.03
(20)	*LNNONAUDITFEES*	0.00	−0.01	−0.10	−0.11	0.49	−0.14	0.03	0.08	0.03	0.07	0.15	−0.03	−0.09	0.17	0.17
(21)	*LNASSETS*	0.00	0.02	−0.19	−0.13	0.80	−0.37	0.03	0.16	−0.13	0.15	0.24	0.05	−0.19	0.10	0.12
(22)	*CASHFLOW*	0.01	0.00	−0.16	−0.11	0.71	−0.39	0.04	0.17	−0.16	0.16	0.20	0.02	−0.19	0.10	0.12
(23)	*LOSS*	0.01	−0.03	0.24	0.29	−0.05	0.16	−0.03	−0.12	−0.05	−0.05	−0.01	0.07	0.03	0.03	0.03
(24)	*MISSTATE*	0.04	0.00	0.02	0.01	0.05	0.03	0.03	0.00	−0.02	0.03	0.04	−0.05	0.01	0.03	0.03
(25)	*MTB*	0.02	0.03	0.04	0.03	0.01	−0.03	−0.01	0.03	0.02	0.01	−0.06	0.01	−0.04	−0.02	−0.02
(26)	*COMPETITION*	−0.01	0.00	−0.10	−0.04	0.21	−0.03	0.01	0.02	0.03	0.10	0.12	−0.03	−0.05	0.04	0.05
(27)	*SALE_GRW*	0.03	0.04	0.04	0.02	−0.09	0.05	0.02	0.06	−0.01	−0.06	−0.12	0.01	0.02	−0.09	−0.09
(28)	*TA*	0.00	0.05	−0.23	−0.35	0.12	−0.10	0.01	0.18	0.08	0.03	0.08	−0.03	−0.04	0.02	0.02
(29)	*NUM_CONNECT*	0.04	0.00	−0.02	−0.02	−0.10	0.05	−0.03	0.02	0.06	−0.04	−0.02	0.01	0.02	−0.02	−0.04
(30)	*MASTER_DUM*	0.00	0.00	−0.02	0.00	−0.01	0.01	0.04	−0.02	−0.06	−0.01	−0.03	−0.07	−0.01	0.02	0.01
(31)	*NUM_EMPLOYER*	0.03	0.00	0.05	0.03	−0.14	0.12	0.00	−0.01	0.06	−0.06	−0.07	−0.02	0.02	−0.03	−0.03

		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
(16)	*GC*	1.00														
(17)	*ICW*	0.06	1.00													
(18)	*INV*	−0.02	−0.02	1.00												

Table 3 (continued)

		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
(19)	*LEV*	0.00	0.01	−0.12	1.00											
(20)	*LNNONAUDITFEES*	−0.06	−0.02	−0.02	0.10	1.00										
(21)	*LNASSETS*	−0.07	−0.10	−0.14	0.22	0.42	1.00									
(22)	*CASHFLOW*	−0.05	−0.12	−0.14	0.19	0.39	0.89	1.00								
(23)	*LOSS*	0.11	0.08	−0.07	0.08	−0.09	−0.11	−0.22	1.00							
(24)	*MISSTATE*	−0.01	0.13	0.03	0.04	0.01	0.01	−0.01	0.04	1.00						
(25)	*MTB*	−0.02	0.00	−0.01	−0.09	0.02	−0.01	0.03	−0.05	−0.01	1.00					
(26)	*COMPETITION*	−0.02	−0.03	0.08	0.02	0.14	0.18	0.16	−0.08	0.02	−0.02	1.00				
(27)	*SALE_GRW*	−0.05	0.06	−0.04	0.01	−0.02	−0.10	−0.11	−0.05	0.07	0.06	−0.02	1.00			
(28)	*TA*	−0.26	−0.04	0.09	−0.07	0.12	0.15	0.03	−0.48	0.04	−0.04	0.06	−0.07	1.00		
(29)	*NUM_CONNECT*	0.01	0.05	−0.06	−0.04	−0.06	−0.13	−0.15	0.03	0.04	0.00	−0.03	0.04	−0.01	1.00	
(30)	*MASTER_DUM*	0.02	−0.03	0.03	0.02	−0.01	−0.02	−0.01	0.01	−0.02	−0.04	0.01	−0.04	0.00	0.07	1.00
(31)	*NUM_EMPLOYER*	−0.02	0.03	−0.01	−0.06	−0.11	−0.14	−0.14	0.07	0.01	−0.03	−0.10	0.03	−0.03	0.25	0.06

following Dechow et al. (1995) are the dependent variables in columns (4), (5), and (6).[13] First, we report regression results without the female indicator in column (1) and column (4) to see whether we have similar empirical findings as Cunningham et al. (2019) that also uses the difference in differences design. We find the similar results that coefficients on *POST* are insignificant across six columns, suggesting no significant audit quality changes between pre and post Rule 3211.[14] This also reflects the importance of considering gender effects on adoption consequences because, after including the *FEMALE* indicator and *FEMALE*POST*, we find significant negative coefficients on *POST*FEMALE* indicators in columns (2), (3), (5), and (6). Specifically, in column (2) and column (3), where the dependent variables are *DACC_ABS*, the coefficients on the interaction *FEMALE*POST* are significantly negative, successfully rejecting the null form of H1 (two-tailed, p value < 0.01).[15] This finding suggests that the decreases in discretionary accruals of the clients audited by female partners are more pronounced than those audited by male partners after the adoption of Rule 3211. In other words, the audit quality of female audit partners improves at a higher rate than that of male audit partners. Similarly, in column (5) and (6), where *JONE_1995_ABS* are dependent variables, the coefficients on the interaction *FEMALE*POST* are significantly negative (two-tailed $p < 0.1$ and $p < 0.05$).[16] This result affirms that female audit partners have more pronounced improvements in audit quality than male partners in the post-adoption period. These results are consistent with the proposition that female audit partners are more concerned with the negative consequences of audit failures because they care about audit clients more than male partners (i.e., gender socialization) or they may endure more severe career punishments (i.e., gender stereotype at work). Female partners would need higher assurance level and become more conservative than their male counterparts after the adoption of the identification rule, and thus, we observe significantly higher audit quality

[13] Column (2) and column (5) report the regression results without controlling audit partners' individual characteristics (i.e., the education level, the counts of prior employers, and the number of linked connections). Column (3) and (6) report regression results after controlling theses partners' characteristics.

[14] Cunningham et al. (2019) do not find improvement of audit quality, proxied by the absolute value of discretionary accrual, F-Score, and incorrect material weakness measures, in the post-adoption periods. However, Burke et al. (2019) find significant improvement of audit quality, measured by absolute value of discretionary accrual, in the post adoption period.

[15] The F-statistics of *POST* + *POST*FEMALE*, reported on the bottom of columns (2) and (3), are 5.56 ($p < 0.001$) and 7.16 ($p < 0.001$), repectively.

[16] The F statistics of *POST* + *POST*FEMALE* in column (5) and (6) are 2.55 and 2.66 (both $p < 0.001$).

Table 4 Audit quality model—H1

	(1) *DACC_ABS*	(2) *DACC_ABS*	(3) *DACC_ABS*	(4) *JONES_1995_ABS*	(5) *JONES_1995_ABS*	(6) *JONES_1995_ABS*
Intercept	0.501**	0.502***	0.526***	0.437**	0.435***	0.463***
	(2.18)	(5.51)	(5.95)	(2.24)	(4.59)	(5.12)
POST	−0.003	0.003	0.002	0.002	0.009	0.008
	(−0.53)	(1.45)	(0.84)	(0.20)	(1.51)	(1.44)
FEMALE		0.022***	0.023***		0.031***	0.037***
		(19.32)	(14.24)		(7.70)	(5.01)
*FEMALE*POST*		**−0.035*** **	**−0.036*** **		**−0.034***	**−0.040****
		(−3.33)	**(−3.29)**		**(−1.91)**	**(−2.26)**
LNASSETS	−0.020	−0.020**	−0.023***	−0.023	−0.023***	−0.026***
	(−1.04)	(−2.38)	(−3.36)	(−1.16)	(−5.38)	(−5.41)
TA	−0.426***	−0.425***	−0.422***	−0.617***	−0.616***	−0.613***
	(−27.21)	(−9.78)	(−9.65)	(−55.63)	(−17.28)	(−17.23)
BUSSEG	−0.000	−0.000	−0.000*	0.001	0.001*	0.001*
	(−0.31)	(−0.44)	(−1.67)	(1.01)	(1.77)	(1.78)
GEOSEG	−0.001	−0.001	−0.001	−0.002**	−0.003***	−0.003***
	(−0.43)	(−1.03)	(−1.48)	(−2.09)	(−3.21)	(−3.16)
FORNSEG	0.001	0.001	0.001*	0.003**	0.004***	0.004***
	(0.55)	(1.26)	(1.84)	(2.41)	(3.76)	(3.54)
LEV	0.015	0.015	0.015	0.022*	0.022	0.020
	(0.80)	(0.38)	(0.35)	(1.71)	(0.42)	(0.39)
INV	−0.095	−0.095***	−0.114***	−0.057	−0.056	−0.063
	(−1.57)	(−2.69)	(−4.16)	(−0.71)	(−0.64)	(−0.71)
AR	0.019	0.020	0.023	−0.027	−0.025	−0.019
	(0.69)	(0.98)	(1.11)	(−1.25)	(−0.54)	(−0.44)
LOSS	−0.005	−0.005	−0.006	−0.021**	−0.021***	−0.020***
	(−0.68)	(−0.59)	(−0.81)	(−2.01)	(−4.73)	(−3.09)
CASHFLOW	−0.002	−0.002	−0.001	0.007	0.007**	0.009**
	(−0.16)	(−0.39)	(−0.39)	(0.61)	(2.13)	(2.00)
MTB	0.000	0.000	0.000	0.000	0.000	0.000
	(1.47)	(0.58)	(0.42)	(1.22)	(0.37)	(0.32)
SALE_GRW	−0.000	−0.000	−0.003	−0.025	−0.026***	−0.029***
	(−0.01)	(−0.04)	(−0.20)	(−1.00)	(−3.08)	(−3.51)
MISSTATE	0.020	0.019**	0.028***	0.036	0.036***	0.049***
	(1.23)	(2.00)	(2.69)	(1.15)	(3.65)	(3.97)
AUDIT_TENURE	−0.001	−0.000	−0.000	0.000	0.000	0.000
	(−1.47)	(−1.58)	(−0.76)	(0.00)	(0.22)	(0.79)
COMPETITION	−0.004	−0.004	−0.007	−0.003	−0.003	−0.008
	(−0.40)	(−0.29)	(−0.45)	(−0.33)	(−0.13)	(−0.33)
LNNONAUDITFEES	0.001	0.001**	0.002***	0.000	0.000	0.001
	(1.28)	(2.47)	(4.45)	(0.55)	(0.53)	(1.10)
NUM_CONNECT			−0.000			−0.000
			(−0.63)			(−0.98)
MASTER_DUM			0.010			0.016
			(0.63)			(0.73)
NUM_EMPLOYER			−0.002			−0.003
			(−0.86)			(−0.72)
N	2383	2383	2383	2383	2383	2383
Audit Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
pseudo R-sq	2.177	2.150	1.837	1.395	1.388	1.285

Table 4 (continued)

	(1) *DACC_ABS*	(2) *DACC_ABS*	(3) *DACC_ABS*	(4) *JONES_1995_ABS*	(5) *JONES_1995_ABS*	(6) *JONES_1995_ABS*
F-stats: POST + POST*FEMALE		5.56	7.16		2.55	2.66
(*p*-value)		(< 0.001)	(< 0.001)		(< 0.001)	(< 0.001)

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

***, **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

This table presents the regression results of audit quality model. By assuming there is no audit partner rotations during the adoption of rule 3211, we use difference-in-differences analyses to examine the gender effects on audit quality changes between before and after the mandatory AP disclosure. All models' specifications include audit firm fixed effects. Robust standard errors are clustered by audit firms. Appendix A in Table 12 provides the variable definitions

associated with clients audited by female partners than those audited by male partners.

With respect to control variables, we find the coefficients for the control variables in our models are generally consistent with prior studies. For instance, *LNASSETS* and *LOSS* variables are negatively associated with discretionary accruals, which is consistent with Reichelt and Wang (2010). Misstatement is positively associated with discretionary accruals, consistent with the notion that companies misstate financial reports engage in higher levels of earnings management (Ettredge et al. 2010).

Next, we examine the effect of audit partner gender on the changes in audit fees following the adoption of Rule 3211. We report our results for this analysis in Table 5. Same as Table 4, we report the regression result of the *POST* indicator alone in Column (1). The result is consistent with Cunningham et al. (2019) and Burke et al. (2019), suggesting significant audit fee increases in the post-adoption periods. We then present the regression results of *POST*FEMALE* in Columns (2) and (3).[17] In both models, we find the coefficients on *FEMALE *POST* are positive and significant at a *p*-value of less than 0.05 level. This suggests that female partners' audit fee increases are more pronounced than fees increases from male counterparts in the post-adoption periods. Specifically, the clients audited by female audit partners experience about 3.5% audit fee increases more than those audited by male partners in the post-adoption periods. These findings support the notion that female partners charge higher fees to compensate for the additional auditing procedures performed to alleviate their reputation and career concerns arisen from the adoption of Rule 3211.

The analysis of the gender effects on the post-adoption periods' audit efforts is reported in Table 6. There are opposition interpretations of audit report lag in prior literature. On the one hand, audit report lag can represent auditors' effort as the longer the lag between the fiscal year-end and the report date, the more effort the auditors may have to put in (Hoitash and Hoitash 2018).On the other hand, audit report lag may represent the untimely of information disclosure perceived negatively by the market (Givoly and Palmon 1982). Burke et al. (2019) find that audit report lag decreases following Rule 3211. They interpret the finding as audit partners are motivated to provide more timely audit reports because they are concerned about the negative market consequences of late reports. This means that Burke et al.'s (2019) finding agrees with the latter argument. However, we find the opposite results. The coefficients on POST indicators are significantly positive in all three columns at a p-value of less than 0.01 level. This result suggests that the audit report lag increases after the mandatory Form AP disclosure. We interpret this as audit partners exert more efforts to complete their audits in the post-adoption periods. Further, the coefficients on *FEMALE*POST* are significantly positive in Column (2) and (3). This suggests that the increase in audit report delay for female partners' clients is more pronounced than that of male partners due to more audit efforts (Bailey et al. 2018; Cao et al. 2020). Specifically, the clients audited by female audit partners experience about 1.4% audit delay increases more than those audited by male partners in the post-adoption periods. This finding is consistent with the logic of the increased audit quality and audit fees associated with female partners because female audit partners become more alert after the adoption of Rule 3211. Consequently, they exert more effort (report lag increases) and charge higher audit fees to ensure the audit quality becoming better (H1).

Collectively, our results reported in Tables 4, 5 and 6 are consistent with the notion that psychological (i.e., females are socialized to be more caring and accountable) and social factors (i.e., females are mainly evaluated on performance and may suffer from more negative career consequences if she fails at work) make female audit partners react to the adoption of Form AP disclosure differently than male partners. These factors would trigger them to be more conservative and skeptical, and exert more effort on the jobs after the revelation of their personal identities following the implementation of Rule 3211.

[17] Column (2) shows the regression result without the partner's personal characteristics, and column (3) includes these characteristics.

Table 5 Audit fee model—H1

	(1) *LNAUDIT_FEES*	(2) *LNAUDIT_FEES*	(3) *LNAUDIT_FEES*
Intercept	11.085***	11.083***	11.015***
	(94.30)	(88.96)	(111.89)
POST	0.148***	0.143***	0.141***
	(8.10)	(8.17)	(7.17)
FEMALE		−0.015	−0.018
		(−0.32)	(−0.32)
*FEMALE * POST*		**0.034****	**0.035****
		(2.20)	**(2.35)**
DACC_ABS	0.133***	0.134***	0.130***
	(3.53)	(3.45)	(3.38)
LNASSETS	0.347***	0.347***	0.348***
	(9.99)	(9.78)	(9.28)
BUSSEG	0.027***	0.027***	0.027***
	(7.33)	(7.09)	(5.98)
GEOSEG	0.012**	0.013**	0.014
	(2.27)	(2.21)	(1.58)
FORNSEG	0.007	0.006	0.005
	(0.93)	(0.75)	(0.48)
LEV	−0.013	−0.018	−0.046
	(−0.37)	(−0.51)	(−1.00)
INV	0.426***	0.425***	0.427***
	(3.84)	(3.67)	(3.80)
AR	0.803***	0.803***	0.757***
	(4.50)	(4.42)	(3.88)
LOSS	0.155***	0.157***	0.163***
	(5.94)	(6.10)	(4.93)
CASHFLOW	0.058**	0.058**	0.054**
	(2.42)	(2.40)	(2.20)
MTB	0.001	0.001	0.001
	(0.63)	(0.60)	(0.64)
NEWFIN	−0.007	−0.010	−0.003
	(−0.66)	(−0.86)	(−0.25)
AFILER	0.084**	0.090***	0.079**
	(2.38)	(2.64)	(2.15)
MISSTATE	0.130***	0.130***	0.121**
	(3.03)	(3.06)	(2.36)
AUDIT_TENURE	−0.000	0.001	0.000
	(−0.10)	(0.30)	(0.22)
COMPETITION	0.073	0.078	0.081
	(1.20)	(1.24)	(1.23)
BUSY	−0.102*	−0.100*	−0.081
	(−1.95)	(−1.87)	(−1.54)
NUM_CONNECT			0.000
			(1.24)
MASTER_DUM			0.013
			(0.34)
NUM_EMPLOYER			0.010
			(0.91)
N	2383	2383	2383
Audit Firm Fixed Effects	Yes	Yes	Yes

Table 5 (continued)

	(1) *LNAUDIT_FEES*	(2) *LNAUDIT_FEES*	(3) *LNAUDIT_FEES*
pseudo R-sq	0.551	0.552	0.553
F-stats: POST + POST*FEMALE(*p*-value)		3.45(< 0.001)	2.71(< 0.001)

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

***, **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

This table presents the regression results of audit fee model. By assuming there is no audit partner rotations during the adoption of rule 3211, we use difference-in-differences analyses to examine the gender effects on audit fees changes between before and after the mandatory AP disclosure. All models' specifications include audit firm fixed effects. T-values included in parentheses are calculated based on robust standard errors clustered by audit firms. Appendix A in Table 12 provides the variable definitions

H2 Results

Table 7 shows the results for H2. Specifically, the similarity-attraction theory suggests that female CFOs may attenuate female audit partners' fees and effort increases without compromising the audit quality in the post-adoption period. On the contrary, the dissimilarity view predicts female CFOs may exacerbate the increases of female audit partners' post-adoption audit quality and efforts without fee increases. First, we present the audit quality results in columns (1) and (2), where the dependent variables are *DACC_ABS* and *JONES_1995_ABS*, respectively. We find the coefficients on *FEMALE*FECFO*POST* are insignificant but positive, suggesting that no audit quality changes associated with the "female team". Further, we present the audit fee result in column (3), the coefficient on *FEMALE*FECFO*POST* is significantly negative at a p-value of less than 0.01 level. This suggests that female CFOs may deter female audit partners' fee increases caused by the AP disclosure. Last, in terms of audit effort analysis (column 4), the coefficient on *FEMALE*FEMALECFO*POST* is also significantly negative (two-tailed, $p < 0.01$). This suggests that female audit partners do not exert extra audit efforts or procedures when working with female CFOs. Combining the findings of audit quality, fees, and efforts analyses, we infer that, due to similarity in work ethics, abilities, and psychological attributes, females may work well together. Specifically, working with female CFOs alleviates female audit partners' reputational and career concerns. As a result, female partners are willing to reduce the added-on audit procedures and efforts that they would otherwise perform in the post-adoption periods. Hence, the "female team" attenuates the gender effects on the post-adoption audit outcomes.

Additionally, we present the regression results of the "female team" composed of female audit committee members and female audit partners in Table 8. In Panel A, we measure female audit committee members' presence in percentage (*FEAC%*). As discussed in the research design session, the *FEMALE*FEAC%*POST* coefficient captures the modifying effect of the "female team" on the post-adoption audit quality. In Column (1) and (2), we find the coefficients on *FEMALE*FEAC%*POST* are insignificant, suggesting no significant audit quality changes associated with female partners working with female audit committee members. In the audit fee analysis (column 3), we find a significantly negative coefficient on *FEMALE*FEAC%*POST* (two-tailed, $p < 0.05$), suggesting the presence of female audit committee member attenuates female partners' post-adoption audit fee increases. Similarly, in the audit effort analysis (Column 4), we find significantly negative coefficients on *FEMALE*FEAC%*POST*, suggesting working with female audit committee members reduces the female audit partners' additional efforts related to the rule 3211. In Panel B, where the presence of female audit committee members is proxied by an indicator variable *FEAC_DUM*, the empirical results are consistent with those in Panel A. In sum, the findings of audit quality, fees, and efforts in both panels provide additional evidences support the findings of H2, which are consistent with the similarity-attraction view.

Taken together, the similarity in work ethics, abilities, social roles, personal, and psychological characteristics motivate females to work well together. In the current study, we find empirical evidence that the female audit partner reserves additional efforts that she would otherwise exert to protect their reputation and careers (findings of H1) when they work with female CFOs (or female audit committee members). Therefore, we conclude that collaboration among "female team" members attenuates the gender effects on the post-adoption audit outcomes.

Table 6 Audit report delay model—H1

	(1) *REPORTLAG*	(2) *REPORTLAG*	(3) *REPORTLAG*
Intercept	5.335***	5.340***	5.316***
	(40.01)	(39.27)	(38.34)
POST	0.144***	0.140***	0.145***
	(6.90)	(6.58)	(8.06)
FEMALE		−0.017	−0.012
		(−1.48)	(−0.90)
*FEMALE*POST*		**0.017****	**0.014***
		(2.05)	**(1.82)**
TA	0.024***	0.024***	0.024***
	(3.58)	(3.57)	(3.09)
LNASSETS	−0.035***	−0.035***	−0.034***
	(−7.39)	(−7.39)	(−5.81)
BUSSEG	0.002	0.002	0.001
	(1.36)	(1.32)	(1.06)
GEOSEG	0.000	0.000	0.000
	(0.22)	(0.14)	(0.76)
LEV	0.045***	0.044***	0.051***
	(4.84)	(4.51)	(4.33)
INV	0.040	0.043	0.056
	(0.84)	(0.86)	(1.05)
AR	0.020	0.018	−0.006
	(0.90)	(0.84)	(−0.25)
LOSS	0.014	0.012	0.009
	(1.04)	(0.91)	(0.57)
CASHFLOW	−0.030***	−0.030***	−0.031***
	(−4.94)	(−4.94)	(−4.02)
MTB	−0.000	−0.000	−0.000
	(−1.09)	(−1.05)	(−1.20)
SALE_GRW	−0.000	−0.000	−0.002
	(−0.08)	(−0.09)	(−0.34)
ICW	0.172***	0.172***	0.175***
	(11.02)	(11.05)	(9.63)
GC	0.102***	0.103***	0.097**
	(2.62)	(2.65)	(2.48)
MISSTATE	−0.011	−0.010	−0.011
	(−0.80)	(−0.73)	(−0.99)
AUDIT_TENURE	−0.002***	−0.002***	−0.002**
	(−3.89)	(−3.37)	(−2.41)
COMPETITION	−0.001	−0.003	−0.002
	(−0.06)	(−0.16)	(−0.07)
BUSY	−0.110***	−0.111***	−0.113***
	(−7.07)	(−6.97)	(−8.25)
NUM_CONNECT			0.000
			(0.10)
MASTER_DUM			−0.018*
			(−1.73)
NUM_EMPLOYER			0.010**
			(2.26)
N	2383	2383	2383
Audit firm fixed effects	Yes	Yes	Yes

Table 6 (continued)

	(1) *REPORTLAG*	(2) *REPORTLAG*	(3) *REPORTLAG*
pseudo R-sq	7.476	7.426	6.841
F-stats: POST + POST*FEMALE		5.52	7.18
(p-value)		(< 0.001)	(< 0.001)

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

*** **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

This table presents the regression results of audit quality model. By assuming there is no audit partner rotations during the adoption of rule 3211, we use difference-in-differences analyses to examine the gender effects on audit report lag changes between before and after the mandatory AP disclosure. All models' specifications include audit firm fixed effects. T-values reported in parentheses are calculated based on robust standard errors clustered by audit firms

Additional Analysis

First, to further support the H1′s findings, we use the likelihood to misstate financial statements *(MISSTATE*) as an additional dependent variable to triangulate the audit quality (DeFond and Zhang 2014; Wang et al. 2015). We report the analysis results in Table 9. Consistent with the findings in Table 4, the coefficients on *FEMALE*POST* are negatively significant (two-tailed, $p < 0.1$), suggesting that clients of female audit partners are less likely to have financial misstatements than clients of male audit partners in the post-adoption period. This additional result reaffirms our main finding that female audit partners are associated with more obvious audit quality improvements than male partners after the adoption of Rule 3211.

Second, this paper uses a difference-in-differences design to provide empirical evidence of how the form AP disclosure changes female audit partners' behaviors to become more accountable than male audit partners. Due to the unobservability of the audit partner's identity before the rule adoption, we acknowledge that our control groups in all the analyses use pseudo audit partners. In other words, we assume the audit partners disclosed in the post-adoption periods are the same audit partners in the pre-adoption periods. Namely, there is no auditor partner rotation at the end of the fiscal year 2016. To alleviate the concern that this assumption may cause estimation errors in the regression analyses, we use the SEC mandatory audit partner rotation regulation to alleviate such concern. Specifically, before 2002, the New York Stock Exchange requires audit committees to enforce audit partner rotation in every seven years. After 2002, the Sarbanes–Oxley Act accelerates the audit partner rotation from every seven years to every five years. Using both old and new audit partner rotation regulations, we approximately deduct the audit partners' rotation cycle for each U.S. client. For example, if the initial engagement of Client A with KPMG was in 1987 and Client A stayed with KPMG till 2016, Client A experienced at least three mandatory audit partner rotations.[18] Following this logic, we will delete Client A from the main sample because Client A changed the audit partner during the fiscal year 2016. Since Client A's audit partner in the fiscal year 2016 (post-adoption) is different from its audit partner in the fiscal year 2015 (pre-adoption), we have an invalid control partner, and we cannot use Client A to conduct the difference-in-differences analyses. Applying this logic, we identify observations with initial engagement years listed in Table 10 that have high chances of audit partner rotations during the year 2016.

Eliminating the observations that may experience audit partner rotation during fiscal years 2015 and 2016, we have 2036 client-year observations in our robustness test sample. Table 11 presents the audit quality robustness results. The coefficients on *FEMALE*POST* are significantly negative in four columns. This indicates that, after considering the potential mandatory audit partner rotation events, the conclusion that female audit partners are associated with better audit quality than male counterparts in the post-adoption period still holds.

Conclusion

The main purpose of the audit partner identification disclosure is to increase the audit participants' sense of accountability and audit process transparency (PCAOB 2015). At the same time, this requirement may lead to an increased level of psychological pressure and reputation risks on audit partners. The mixed finding in the literature of this important and heavily debated regulatory change in the U.S. motivates us to re-examine the initial effects of Form AP mandatory disclosure on audit outcomes from the gender perspective.

In this paper, we answer the questions of whether the gender difference motivates auditing professionals to react to the

[18] The three times mandatory rotation is calculated as (2001–1987)/7 + (2016–2001)/5 = 3.

Table 7 Female audit partners and female CFOs—H2

	(1) *DACC_ABS*	(2) *JONES_1995_ABS*	(3) *LNAUDIT_FEES*	(4) *REPORTLAG*
Intercept	0.150***	0.079***	13.961***	4.047***
	(4.43)	(4.88)	(119.79)	(287.85)
POST	−0.015***	−0.031***	0.156***	−0.001
	(−5.52)	(−10.10)	(2.65)	(−0.20)
FEMALE	−0.005	0.004	−0.039	−0.018***
	(−0.97)	(0.62)	(−0.66)	(−14.22)
*FEMALE*POST*	0.007	−0.001	0.052***	0.016***
	(0.73)	(−0.06)	(3.17)	(27.13)
FECFO	−0.009*	-0.016***	−0.025	−0.024***
	(−1.68)	(−2.73)	(−0.75)	(−3.67)
*FEMALE*FECFO*	0.027*	0.039	0.304***	0.012***
	(1.75)	(1.18)	(2.64)	(7.56)
*FECFO*POST*	−0.002	0.014***	0.068**	−0.008
	(−0.25)	(2.79)	(2.18)	(−1.48)
*FEMALE*FECFO*POST*	0.008	0.024	**−0.274*** **	**−0.025*** **
	(0.18)	(0.49)	**(−3.40)**	**(−2.76)**
CFO_POWER	0.035	0.029	−0.501***	−0.016***
	(1.57)	(1.49)	(−3.48)	(−2.60)
LNASSETS	−0.012*	−0.003	0.427***	−0.002
	(−1.88)	(−0.53)	(17.31)	(−0.37)
TA	−0.042	−0.239*	0.209	−0.048***
	(−0.30)	(−1.79)	(0.58)	(−2.65)
BUSSEG	−0.001*	−0.000	0.028***	0.003***
	(−1.70)	(−0.48)	(10.52)	(14.79)
LEV	0.002	0.026**	−0.089	0.073
	(0.19)	(2.00)	(−0.93)	(1.22)
INV	−0.015	0.018	0.388	−0.146***
	(−0.79)	(0.78)	(1.47)	(−3.26)
LOSS	0.038***	0.034**	0.165***	0.020***
	(2.70)	(2.32)	(3.25)	(7.84)
CASHFLOW	0.007	−0.001	0.016	−0.006
	(1.20)	(−0.11)	(0.71)	(−0.68)
MTB	0.000	0.000***	0.003**	0.000
	(1.31)	(3.33)	(2.31)	(0.61)
AFILER	−0.047**	−0.023	−0.331***	−0.019
	(−2.33)	(−1.16)	(−3.41)	(−2.14)
GC	0.189**	0.166***	0.186	−0.018
	(2.15)	(2.77)	(1.54)	(−1.47)
BUSY	0.010***	0.026***	−0.187**	−0.002
	(3.12)	(7.53)	(−2.51)	(−0.47)
N	2383	2383	2383	2383
Audit Firm Fixed Effects	Yes	Yes	Yes	Yes
pseudo R-sq	0.075	0.125	0.414	0.794

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

This table presents the difference-in-differences regression results of the audit quality, audit fee, and audit report lag models (H2). In these tests, we consider the impact of female team (i.e., female CFOs and female audit partners) on audit quality, audit fees, and audit report lags after the adoption of Rule 3211. Column (1) and Column (2) reports the effect of female CFOs and female audit partners' interactions on audit quality in the post adoption period. The dependent variables are *DACC_ABS and JONES_1995_ABS*, respec-

Table 7 (continued)

tively. Column (3) represents the effect of female CFOs and female audit partners' interactions on audit fees in the post adoption period. Column (4) represent the effect of female CFOs and female audit partners' interactions on audit delay in the post adoption period. All models' specifications include audit firm fixed effects. *T* values reported in parentheses are calculated based on robust standard errors clustered by audit firms

***, **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

same regulatory event differently and whether such reaction differences increase the quality and costs of audit services in the U.S. Using the difference-in-differences design, we find that the female audit partners are associated with more pronounced audit quality improvement than male partners after the adoption of Rule 3211. We also find female audit partners are associated with higher audit fees and report lags (i.e., efforts) than male counterparts after the adoption. Moreover, we find that the presence of female CFOs (or female audit committee members) attenuates the post-adoption increased audit fees and efforts, without compromising audit quality. This is consistent with the similarity-attraction paradigm. Female partners and female executives are similar in terms of work ethics, abilities, personality, and psychological attributes, and thus, they trust each other and work well together during stressful times (i.e., Rule 3211 adoption). Therefore, when working with female CFOs (or audit committee members), female partners reduce the added-on audit procedures/efforts that they are motivated to perform after the adoption (as the findings of H1).

Overall, the contribution of this paper is not to reiterate prior findings that female auditors are associated with better quality or higher fees but to use a regulatory event to capture the psychological profile difference between male and female partners. Rule 3211 does not enforce or change any audit procedures but merely discloses partners' names to the public. The observed audit outcome differences between female and male partners are thus not motivated by external factors but by internal factors—psychology. Females who have experienced hardships in gaining their status in the firm and are molded into caring roles react notably differently than male partners because they are highly alerted by the professional reputation risks associated with the publication of their names. Due to gender socialization and gender discrimination in the workplace, female audit partners know their career cannot afford public failures and they also feel highly responsible for the firms' and clients' reputations. Their self-disciplinary and cautiousness motivate them to change audit behavior to ensure the quality of the audits. On the other hand, male partners who are not socialized into communal value and do not need to break any glass ceilings may not realize or feel the threats and riskiness of the publication of personal identity. Therefore, we do not observe significant audit quality, effort, and fee increases of male partners in the post-adoption periods.

The finding of this paper also suggests that females trust each other and work well with each other. The understanding and mutual personal and professional experience give female teams strong bonding that they rely on each other in the time of change and stress. This is also new to the literature. We suggest that future research can further investigate whether such bonding comes from the audit demand or supply side and whether such bonding can offer better audit services in the long run. For example, researchers can conduct surveys of executives and audit committee members to question whether perception about audit quality and client satisfaction are gender-based. Such research could explore whether a general preference and demand for diversity can be translated into a preference and demand for a female auditor.

Last, the findings of reaction differences between male and female audit partners suggest that rule 3211 is mostly carried out by females, rather than males. This is also new to the literature because prior studies find the enhanced quality and fees in the post adoption periods but we do not know whether such enhancement is evenly complied by every partner or mainly driven by a group of people, such as Big 4 or small audit firms. This paper reveals that the enhancement is driven by females. From this aspect, auditing standard setters need to consider the psychological and behavioral differences between male and female auditors in future regulation-making.

More importantly, in public accounting firms, gender discrimination is a significant phenomenon (Lennox and Wu 2018). Statistically, in the U.S., only 18% of partners are females but at least 50% of accounting graduates are females (AICPA 2011). Several gender discrimination lawsuits have been filed against high profile public accounting firms (e.g., Price Waterhouse v. Hopkins 1989; Page v. PricewaterhouseCoopers 2004; Kassman v. KPMG 2011). These firms should already acknowledge the costs and risks of gender discrimination and are motivated to close the psychological and behavior gaps between female and male auditors. Audit firms have significant and urgent responsibilities to change the current situation by supporting women to dismantle career barriers, electing women, and giving women opportunities to grow into leadership roles.

For future research, the current literature has documented the behavior difference between male and female auditors (Ittonen et al. 2013; Hardies et al. 2015, 2018, 2020; Li et al. 2017). What is missing is the psychological differences

Table 8 Female audit partner and female audit committee members

	(1) *JONES_1995_ABS*	(2) *DACC_ABS*	(3) *LNAUDIT_FEES*	(4) *REPORTLAG*
Panel A: female audit committee member percentage test				
Intercept	0.064***	−0.008	11.265***	3.720***
	(2.66)	(−0.06)	(50.68)	(5.40)
FEMALE	0.002	0.004	-0.094	0.016***
	(0.14)	(0.36)	(−1.45)	(2.75)
POST	−0.009	−0.001	0.122***	−0.005
	(−1.00)	(−0.09)	(7.45)	(−1.63)
*FEMALE*POST*	−0.001	−0.006	0.052	0.014***
	(−0.08)	(−0.56)	(1.33)	(2.82)
FEAC%	−0.031***	−0.008	0.224***	0.063***
	(−2.33)	(−0.76)	(2.53)	(3.17)
*FEAC%*POST*	0.026***	0.007	0.071	0.004
	(2.50)	(0.45)	(1.42)	(0.36)
*FEMALE*FEAC%*	0.035	−0.001	0.492	0.039**
	(1.01)	(−0.03)	(1.16)	(2.16)
*FEMALE*FEAC%*POST*	−0.012	0.010	**−0.238****	**−0.216*****
	(−0.33)	(0.33)	**(−1.68)**	**(−6.50)**
LNASSETS	−0.006	−0.013***	0.441***	0.036***
	(−1.12)	(−3.20)	(15.43)	(4.01)
TA	−0.225***	0.029	0.632***	−0.017***
	(−2.39)	(0.42)	(2.48)	(−2.48)
BUSSEG	−0.001	−0.001**	0.028***	0.001***
	(−1.28)	(−1.68)	(10.41)	(8.22)
LEV	0.044***	0.011	−0.130	0.005
	(4.03)	(1.12)	(−1.36)	(0.14)
INV	0.028	−0.007	0.297	−0.127***
	(1.23)	(−0.28)	(1.03)	(−3.43)
LOSS	0.035***	0.046***	0.169***	0.007
	(3.21)	(5.02)	(5.74)	(1.87)
CASHFLOW	0.005	0.010***	0.017	−0.004
	(0.96)	(2.94)	(0.68)	(−0.52)
MTB	0.000	0.000***	0.001	−0.000***
	(0.24)	(4.50)	(0.64)	(−7.69)
AFILER	−0.085***	0.018	−0.298	0.014
	(-9.32)	(0.15)	(−1.08)	(1.23)
GC	0.105***	0.172***	0.411***	0.004
	(5.10)	(2.39)	(2.86)	(1.22)
BUSY	0.011**	0.001	−0.193***	−0.018***
	(1.92)	(0.06)	(−5.56)	(−3.34)
N	1695	1695	1695	1695
Audit firm fixed effects	Yes	Yes	Yes	Yes
pseudo R-sq	0.104	0.054	0.418	0.598
Panel B: Female audit committee member dummy test				
Intercept	−0.019	0.012	10.980***	3.716***
	(−0.72)	(0.80)	(140.59)	(5.89)
FEMALE	−0.008	−0.003	−0.122***	−0.025***
	(−0.73)	(−0.21)	(−2.68)	(−4.45)
POST	−0.010	−0.002	0.116***	−0.005
	(−1.24)	(−0.15)	(6.61)	(−1.35)

Table 8 (continued)

	(1) *JONES_1995_ABS*	(2) *DACC_ABS*	(3) *LNAUDIT_FEES*	(4) *REPORTLAG*
*FEMALE*POST*	0.005	−0.002	0.086***	0.034***
	(0.28)	(−0.17)	(2.37)	(18.16)
FEAC_DUM	−0.014***	−0.005	0.083**	0.031***
	(−3.23)	(−1.31)	(1.95)	(4.89)
*FEAC_DUM*POST*	0.011***	0.004	0.030	0.001
	(3.51)	(0.87)	(1.27)	(0.14)
*FEMALE*FEAC_DUM*	0.029***	0.009	0.200**	0.004***
*FEMALE*FEAC_DUM*POST*	−0.015	−0.002	**−0.130*** **	**−0.019*** **
	(−0.83)	(−0.11)	**(−3.12)**	**(−3.53)**
LNASSETS	−0.006	−0.014***	0.441***	0.036***
	(−1.15)	(−3.34)	(15.85)	(4.43)
TA	−0.227***	0.027	0.608***	−0.012
	(−2.47)	(0.43)	(2.43)	(−1.77)
BUSSEG	−0.001	−0.001**	0.027***	0.001***
	(−1.32)	(−1.74)	(9.68)	(8.47)
LEV	0.045***	0.010	−0.144	−0.003
	(4.39)	(0.99)	(−1.57)	(−0.08)
INV	0.029	−0.007	0.296	−0.119***
	(1.22)	(−0.25)	(1.02)	(−3.32)
LOSS	0.035***	0.046***	0.162***	0.009**
	(3.34)	(5.26)	(5.44)	(3.06)
CASHFLOW	0.005	0.011***	0.016	−0.005
	(0.98)	(3.14)	(0.69)	(−0.58)
MTB	0.000	0.000***	0.001	−0.000***
	(0.18)	(4.53)	(0.61)	(−20.58)
AFILER	0.004	0.013	0.107***	0.010
	(0.44)	(1.39)	(2.28)	(1.34)
GC	0.131***	0.166***	0.517**	0.003
	(3.05)	(2.11)	(1.93)	(0.81)
BUSY	0.012**	0.001	−0.193***	−0.017**
	(1.93)	(0.11)	(−5.36)	(−3.12)
N	1695	1695	1695	1695
Audit firm fixed effects	Yes	Yes	Yes	Yes
pseudo R-sq	0.104	0.055	0.419	0.599

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

This table presents the additional tests that investigate the effects of the interaction between female audit committee members and female audit partner on audit quality, audit fees, and audit report lags after the adoption of Rule 3211. In Panel A, female audit committee members are proxied by the percentage of females on the audit committee (*FEAC%*). In Panel B, the female audit committee members are proxied by an indicator variable set to one if there is a female on the audit committee (*FEAC_DUM*). In both panels, Column (1) and Column (2) represent the effect of the female team on audit quality in the post adoption period. The dependent variables are *DACC_ABS and JONES_1995_ABS*, respectively. Column (3) represents the effect of female team on audit fees in the post adoption period. Column (4) represent the effect of female team on audit delay in the post adoption period. All models' specifications include audit firm fixed effects. *T* values reported in parentheses are calculated based on robust standard errors clustered by audit firms

***, **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

Table 9 Audit quality model—misstatement

	(1) *MISSTATE*	(2) *MISSTATE*	(3) *MISSTATE*
Intercept	−2.160***	−2.170***	−2.181***
	(−12.85)	(−13.45)	(−21.02)
POST	−0.029	0.003	−0.005
	(−0.74)	(0.08)	(−0.13)
*FEMALE*POST*		**−0.199***	**−0.199***
		(−1.71)	**(−1.76)**
FEMALE		0.062	0.042
		(1.25)	(0.45)
LNASSETS	0.037	0.038	0.037***
	(1.53)	(1.61)	(9.79)
TA	−0.055***	−0.054***	−0.054
	(−3.35)	(−3.33)	(−1.02)
GEOSEG	−0.017	−0.016	−0.010
	(−0.65)	(−0.62)	(−1.07)
FORNSEG	0.025	0.025	0.018
	(0.78)	(0.76)	(1.63)
LEV	0.174*	0.177*	0.122***
	(1.82)	(1.89)	(4.52)
INV	0.087	0.084	0.166***
	(0.62)	(0.60)	(4.27)
AR	−0.214	−0.228	−0.289*
	(−0.85)	(−0.91)	(−1.73)
LOSS	0.152***	0.156***	0.153***
	(2.77)	(2.86)	(3.78)
MTB	−0.004***	−0.004***	−0.004**
	(−2.58)	(−2.66)	(−2.46)
SALE_GRW	−0.004	−0.003	0.002
	(−0.18)	(−0.12)	(0.11)
ICW	0.812***	0.817***	0.823***
	(13.92)	(14.63)	(13.44)
AUDIT_TENURE	−0.006	−0.006	−0.008
	(−0.73)	(−0.75)	(−0.84)
COMPETITION	0.034	0.037	0.064
	(0.29)	(0.31)	(1.05)
NUM_CONNECT			−0.000
			(−0.32)
MASTER_DUM			0.076**
			(2.42)
NUM_EMPLOYER			0.040***
			(2.97)
N	2383	2383	2383
Audit firm fixed effects	Yes	Yes	Yes
pseudo R-sq	0.077	0.078	0.080
F-stats: POST + POST*FEMALE		3.06	15.53
(*p* value)		(< 0.001)	(< 0.001)

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

This table presents the robustness test results of audit quality model by using misstatement as dependent variable. By assuming there is no audit partner rotations during the adoption of rule 3211, we use difference-in-differences analyses to examine the gender effects on audit quality changes between before and after the mandatory AP disclosure. All models' specifications include audit firm fixed effects.

Table 9 (continued)

Robust standard errors are clustered by audit firms. Appendix A Table 12 provides the variable definitions

*** **, and * represent significance at the 0.01, 0.05, and 0.10 levels, respectively, based on two-tailed tests

Table 10 The initial engagement year of audit client experience mandatory audit partner rotation in fiscal year 2016

(1) Client's initial engagement year	(2) Rotation interval
2016	5 years
2011	5 years
2006	5 years
2001	7 years
1994	7 years
1987	7 years
1980	7 years

This table lists the initial engagement year of audit clients that may experience mandatory audit partner rotation during the fiscal year 2016. In this case, these client-year observations need to be deleted from our base sample because these client-year observations increase the estimation errors of our difference-in-differences analyses. In these cases, we assume wrong audit partners for the clients in pre-adoption periods. For robustness reason, we eliminate the observations with the initial engagement in the year listed column (1) to partially reduce using wrong pseudo control groups in the difference-in-differences analyses

between male and female audit partners and costs associated with such differences. The data and method used in this study do not allow us to obtain direct evidence of the motivation of female partners. We hope that we inspire future research to use different methodologies, such as interviews, surveys, or questionnaires, to collect more evidence of the psychological difference between males and female partners. Future research could delve more into audit firm's governance such as whether there is a pay gap between female and male partners, the promotion mechanism between female and male associates, the punishment strategies used on males and females. More importantly, how these different treatments result in different psychological profiles and behaviors between female and male partners. In short, future research bears real responsibilities to investigate, reveal, and inform the practice, regulators, and public about gender inequality. We need to improve our understanding of the origin of gender discrimination and how to reduce gender inequality in the public accounting sector.

Table 11 Audit quality model—eliminate mandatory audit partner rotation

	(1)	(2)	(3)	(4)
	DACC_ABS	*DACC_ABS*	*JONES_1995_ABS*	*JONES_1995_ABS*
Intercept	0.222***	0.258***	0.120***	0.154***
	(6.58)	(7.62)	(3.27)	(3.59)
POST	0.004**	0.002	0.006	0.005
	(2.07)	(1.11)	(1.19)	(0.81)
*FEMALE*POST*	**−0.026****	**−0.028*****	**−0.026***	**−0.030***
	(−2.49)	**(−2.95)**	**(−1.87)**	**(−1.82)**
FEMALE	0.013*	0.014**	0.020**	0.021
	(1.81)	(2.01)	(1.99)	(1.56)
LNASSETS	−0.018***	−0.020***	−0.020***	−0.022***
	(−3.24)	(−3.65)	(−4.77)	(−4.35)
TA	−0.436***	−0.432***	−0.629***	−0.624***
	(−16.21)	(−15.75)	(−27.43)	(−26.51)
BUSSEG	0.000	0.000	0.001	0.001
	(0.86)	(0.53)	(0.90)	(1.36)
GEOSEG	0.000	0.000	−0.000	−0.000
	(0.44)	(0.41)	(−0.30)	(−0.50)
FORNSEG	−0.000	−0.000	0.000	0.001
	(−0.10)	(−0.10)	(0.35)	(0.48)
LEV	0.015	0.017	0.026	0.027
	(0.84)	(0.81)	(1.01)	(0.99)
INV	−0.034	−0.048	−0.016	−0.023
	(−0.68)	(−0.91)	(−0.27)	(−0.36)
AR	0.028**	0.028***	−0.010	−0.007
	(2.24)	(2.70)	(−0.31)	(−0.23)
LOSS	−0.005	−0.007	−0.015	−0.015
	(−0.62)	(−0.88)	(−1.49)	(−1.41)
CASHFLOW	−0.002	−0.003	0.006**	0.007**
	(−0.54)	(−0.82)	(2.20)	(2.08)
MTB	0.001	0.001	0.001	0.001
	(1.19)	(0.99)	(1.29)	(1.13)
SALE_GRW	0.020	0.015	0.010	0.003
	(1.36)	(1.00)	(0.43)	(0.15)
MISSTATE	0.014	0.021*	0.025*	0.034**
	(1.54)	(1.79)	(1.86)	(1.96)
AUDIT_TENURE	−0.001**	−0.000	−0.000	0.000
	(−2.13)	(−1.52)	(−0.20)	(0.19)
COMPETITION	0.001	0.000	0.002	0.002
	(0.06)	(0.03)	(0.20)	(0.11)
LNNONAUDIT_FEES	0.001	0.001**	−0.000	0.000
	(1.54)	(2.01)	(−0.06)	(0.32)
NUM_CONNECT		−0.000*		−0.000
		(−1.76)		(−1.52)
MASTER_DUM		0.011		0.016
		(1.05)		(0.96)
NUM_EMPLOYER		0.001		−0.001
		(0.33)		(−0.27)
N	2036	2036	2036	2036
Audit firm fixed effects	Yes	Yes	Yes	Yes
pseudo R-sq	2.470	2.110	1.540	1.429
F stats: POST + POST*FEMALE	33.41	24.89	8.32	29.26
(*p* value)	(< 0.001)	(< 0.001)	(< 0.001)	(< 0.001)

Bold represents that the coefficients on variable of interests are statistically significant at 0.1, 0.05, or 0.01 levels.

This table presents the robustness test of audit quality models after considering the potential mandatory audit partner rotation events. To reduce the possibility of assuming the wrong audit partners for the clients in the pre-adoption periods, we eliminate the observations with initial engagement year listed in Table 11 to reduce the estimation errors in the difference-in-differences analyses. All models' specifications include audit firm fixed effects. Robust standard errors are clustered by audit firms. Appendix A in Table 12 provides the variable definitions

Appendix

See Table 12.

Table 12 Variable definitions

Variable definition	Definition	Database	Fiscal year	Observation unit
Independent variable				
FEMALE	1 if the audit partner is a female; 0 otherwise	www.Linkedin.com	2015–2016	Client-year
POST	1 if the client's auditor opinion is issued by the U.S. audit firms with signature dates after January 31st, 2017	Audit analytics	2015–2016	Client-year
FEAC%	The percentage of female audit committee members in year *t*	ISS—directors	2015–2016	Client-year
FEAC_DUM	1 if client has a female audit committee member; 0 otherwise	ISS—directors	2015–2016	Client-year
FECFO	1 if client has a female CFO; 0 otherwise	ISS—directors	2015–2016	Client-year
Dependent variable				
DACC_ABS	Absolute value of the discretionary accrual calculated following Ball and Shvakumar (2006)	Compustat	2015–2016	Client-year
JONES_1995_ABS	Absolute value of the discretionary accrual calculated following Dechow, Sloan, Sweeney (1995)	Compustat	2015–2016	Client-year
LNAUDIT_FEES	The natural log of the client's audit fee in year *t*	Audit analytics	2015–2016	Client-year
REPORTLAG	The natural log of the lag between the auditor's signature date and the date the fiscal year end	Audit analytics	2015–2016	Client-year
Control variables				
AFILER	1 if the client is an accelerated filer, 0 otherwise	Compustat	2015–2016	Client-year
AR	Accounts receivable scaled by total asset in year *t*	Compustat	2015–2016	Client-year
AUDIT_TENURE	The number of years client has been with the incumbent auditor	Audit analytics	2015–2016	Client-year
BUSSEG	The number of business segments in the year	Compustat segments	2015–2016	Client-year
BUSY	1 if the client has a December fiscal year-end, 0 otherwise	Compustat	2015–2016	Client-year
CASHFLOW	Nature log of cash flow from operation (OANCF) in year *t*	Compustat	2015–2016	Client-year
CFO_POWER	The ratio of the total compensation of CFO scaled by the total compensation of top five executives of the client in year *t*	Execucomp	2015–2016	Client-year
COMPETITION	Spatial competition measure based on Numan and Willekens (2012), i.e., smallest absolute fee market share difference between the incumbent auditor and its closest competitor in the local (MSA-industry) audit market	Audit-analytics	2015–2016	Client-year
FORNSEG	The number of foreign segments in the year *t*	Compustat segments	2015–2016	Client-year
GEOSEG	The number of geographical segments in the year *t*	Compustat segments	2015–2016	Client-year
GC	1 if the client received a going concern opinion in year *t*	Audit analytics	2015–2016	Client-year
ICW	1 if the client disclosed a material weakness in internal control over financial reporting under SOX Sect. 404 in year *t*; 0 otherwise	Audit analytics	2015–2016	Client-year
INV	The client's inventory scaled by total asset (INVT/AT)	Compustat	2015–2016	Client-year
LEV	The debt to asset ratio (Compustat: DLTT/AT)	Compustat	2015–2016	Client-year
LNASSETS	The natural log of total assets (in millions of $) at the balance sheet date	Compustat	2015–2016	Client-year
LNNONAUDITFEES	The natural log of non-audit fees the auditor charges the client	Audit analytics	2015–2016	Client-year
LOSS	1 if the reports a loss during the year; 0 otherwise. (Compustat: NI)	Compustat	2015–2016	Client-year
MISSTATE	1 if the client's financial statements are misstated in fiscal year *t* as revealed by a subsequent period restatement, 0 otherwise	Audit analytics	2015–2016	Client-year
MTB	Market to book ratio AT the balance sheet date	Compustat	2015–2016	Client-year
NEWFIN	1 if the change of long-term debt is greater than zero; 0 otherwise	Compustat	2015–2016	Client-year
SALE_GRW	The growth in sale from year t-1 to year *t*	Compustat	2015–2016	Client-year
TA	Total accruals divided by lagged value of total asset	Compustat	2015–2016	Client-year
Partner characteristics variables				
MASTER_DUM	1 if the audit partner has a master's degree; 0 otherwise	www.Linkedin.com	2015–2016	Client-year
NUM_CONNECT	The number of connections reported on the audit partner's profile	www.Linkedin.com	2015–2016	Client-year
NUM_EMPLOYER	The total number of employers (past and present) that the audit partner has worked for	www.Linkedin.com	2015–2016	Client-year

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