WORKING PAPER

Empirical Evidence on Gender Effect and Workload Allocation in Audit Firms

Eddy Cardinaels
Simon Dekeyser
Ruiqiong (Cara) Zhang

KEY TAKE-AWAYS

In this paper we find that female partners are associated with lower levels of workload in terms of the number of clients they serve. Our results also show that female partners audit fewer new clients. We find that the gender effect on workload is particularly strong for partners in the earlier stages of their careers. For experienced partners, we do not find gender differences in their workload, suggesting that differences between males and females in terms of workload eventually disappear. Further, we find that female auditors have clients with higher audit quality, but when controlling for workload this effect becomes smaller and even disappears in the full and Non-Big 4 sample. Our results suggest that differences in the workload allocation process can be a contributing factor to different levels of audit quality that female partners provide compared to their male counterparts. That is male auditors audit significantly more clients, which may constitute a risk factor for the audit quality they provide.

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Empirical Evidence on the Role of Gender in Workload Allocation in Audit Firms

Eddy Cardinaels
Tilburg University and KU Leuven

Simon Dekeyser
KU Leuven

Ruiqiong (Cara) Zhang
Tilburg University and KU Leuven

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* Corresponding author
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Abstract

In this paper, we investigate gender differences in the workload allocation process. Using a sample of 3,852 auditor-year observations and 107,213 firm-year observations from Belgium, we find that female auditors are associated with lower total and new workload levels, as measured by the number of (new) clients and the total assets of the (new) clients they serve. We find that the effect of gender on workload is particularly strong for auditors in the early stages of their careers and disappears as their careers progress. Furthermore, we find that female auditors are associated with higher audit quality; however, this effect largely disappears when controlling for workload. Our results suggest that differences in workload allocation may be a factor contributing to variations in audit quality levels between female and male auditors. That is, male auditors audit significantly more clients, which may constitute a risk factor to the audit quality they provide.

Keywords: workload, audit quality, gender differences, client allocation

1. Introduction

The workload allocation process of assigning engagement auditors to clients in audit firms is an important topic of research (Lennox & Wu, 2018). This allocation process is not a unilateral decision made by the audit firm, but an outcome of negotiations and compromises between audit firms and engagement auditors. Both audit firms and engagement auditors must consider the auditors' workload because too many clients can be an important risk factor to audit effectiveness and efficiency (Lindberg & Maletta, 2003; PCAOB, 2014, p. 26). Thus, ideally, audit firms should carefully manage auditors' workloads and try to make a relatively balanced allocation of clients across their engagement auditors. However, the determination of workload depends on both the audit firms' judgment and the auditors' own preferences. The outcome of this workload allocation process may differ for female and male auditors, as structural and cultural barriers may lead to unequal treatment or different work-life choices, resulting in systematic differences in workload allocation across genders.

Although the number of studies on gender in the auditing context is rising, the impact of gender on the workload allocation process has still received scant attention (Hardies & Khalifa, 2018). Prior literature has mostly examined the impact of gender on audit outcomes, including audit quality and audit pricing. The current evidence hints that female partners have a positive effect on audit quality, depending on the type of clients that they audit (Breesch & Branson, 2009; Hardies & Khalifa, 2018; Harymawan et al., 2019). While these studies provide initial evidence of a gender effect on audit quality, these studies overlook a potentially critical mechanism: differences in workload allocation. Understanding how gender influences workload is important, as it may not only explain the observed differences in audit quality but

also reveal deeper structural inequalities in career development between female and male auditors. By focusing on auditors' workload, we aim to determine whether female auditors systematically manage fewer clients than their male counterparts, and whether this disparity contributes to differences in audit quality.

There are several reasons why workload may differ between males and females: affinity bias within audit firms, differences in work-life pressures, evaluation standards, and status recognition concerns. These differences may lead to females being assigned a smaller workload or choosing to take on less workload. First, a male-dominated leadership may allow men in top positions to share more resources with their male colleagues (i.e., an affinity bias toward male auditors). This bias may result in difficulties for female auditors in competing for extra clients and assignments (Gneezy et al., 2003). Second, female auditors may choose to manage a lower level of workload compared to their male counterparts. For example, females may have different work-life balance pressures because they value other aspects of their lives or face stronger societal pressures to attend to family (Powell & Mainiero, 1992; Vianen & Fischer, 2002). In addition, for female auditors, "doing the job well" might be evaluated more strictly than their male counterparts (Bauer & Baltes, 2002; Rivera & Tilcsik, 2019). Therefore, to be evaluated as a "good performer", female auditors may prefer to constrain their portfolio and focus more on performance improvement behavior to guarantee audit quality, rather than bringing in new clients or extending their personal client portfolio. Men, on the contrary, might focus on revenue generation, which could lead to consciously expanding their portfolio to the point that it threatens audit quality.

Given these factors, we anticipate that the outcome of the workload allocation process differs between female and male auditors. That is, female auditors might receive significantly lower levels of workload compared to male auditors, which might result in different levels of audit quality they provide. We first test the association between the auditor's gender and total workload. We measure workload by the number of clients and the summed total assets of the portfolio per auditor per year (*H1a*). This step allows us to obtain initial evidence on whether female auditors are treated differently from their male counterparts in terms of total workload. Then, in the second stage, we investigate the allocation of new clients by examining the effect of gender on the allocation of clients that are new to the audit firm (*H1b*). In the last step, we test the impact of workload on audit quality (*H2*), and address the research question of whether female auditors provide higher audit quality when controlling for differences in workload (*RQ*).

We collect data for the period from 2013 to 2020 for the entire Belgian market. This coverage gives us a unique advantage as it contains auditor information for the whole Belgian market, including all private and publicly listed companies that require to have an auditor. Given the full coverage, we can offer an accurate estimate of the total amount of workload per auditor. For *H1a*, we use the sample of 3,852 auditor-year-firm observations to test for potential differences in workload between female and male engagement auditors at the portfolio level. Our measure for workload is the number of clients that are assigned to each auditor per year and the total assets of the auditor's portfolio per year. For *H1b*, we further test the association between the auditor's gender and new client allocation using a smaller sample of 3,197 auditor-

year-firm observations[1]. Next, we test our *H2* using the sample of 107,213 client-year observations. For audit quality, we look at the client's financial reporting quality, as measured by the level of earnings management (i.e., absolute discretionary accruals).

Our results show that female auditors are associated with lower levels of total workload than male auditors. On average, female auditors have 20.7% fewer clients in their portfolios than male auditors (23.5% smaller when measured by summed total assets). This gender effect is evident in both Big 4 and Non-Big 4 firms, as female auditors have 22.0% fewer clients (18.5% smaller when measured by summed total assets) than their male counterparts in Non-Big 4 firms, whereas the difference equals 18.1% (30.7% smaller when measured by summed total assets) in Big 4 firms[2]. We also find that female auditors are negatively associated with new client allocation. Our additional results indicate that auditors with less experience drive the gender effect on workload. Female auditors have lower workloads at the early career stage, but this gap gradually narrows and eventually disappears as we do not find gender differences in workload for more experienced auditors[3]. Since experience is correlated with personal life priorities, these results are consistent with female auditors making different work-life choices at the beginning of their careers. While our results do not definitively rule out bias in workload allocation within audit firms, they suggest that if such bias exists, it is most pronounced at the

[1] We lose the observations in the year 2013 due to the lagged auditor portfolio characteristics.

[2] Regarding the number of clients per auditor per year, the coefficient on gender is -0.232, -0.200, and -0.249 for the full sample, Big4 sample, and Non-Big 4 sample, respectively. According to the log-transformed, these coefficients can be transformed into 20.7%, 18.1% and 22.0%, respectively.
Regarding the summed total assets per auditor portfolio per year, the coefficient on gender is -0.268, -0.367, and -0.172 for the full sample, Big4 sample, and Non-Big 4 sample, respectively. According to the log-transformed, these coefficients can be transformed into 23.5%, 30.7% and 15.8%, respectively.
The example for the calculation is (exp (-0.232) – 1) * 100 = 20.7%.

[3] While the gender gap in terms of workload eventually disappears when female auditors are very experienced, the population of these experienced female auditors is small. Only 12.9% of auditors with above-average experience are women.

beginning of auditors' careers. However, it is important to stress that although females eventually achieve a similar amount of workload, the initial gap can negatively affect the career prospects of females due to lower portfolio development and experience accumulation.

We also find that a higher level of workload is negatively associated with audit quality and that female auditors deliver higher audit quality, the latter effect being documented in prior research (Hardies et al., 2016; Harymawan et al., 2019). However, we find that the gender effect on audit quality largely disappears when controlling for the workload. In most analyses, we do not find a statistically significant gender effect on audit quality when we consider workload. Overall, our results suggest that this gender effect on audit quality may be driven by systematic differences in workload allocation. That is, female auditors deliver higher audit quality because they have a more manageable workload.

This study answers the call of Francis (2011) to open up the "black box" of the auditing firm's organizational operations by examining the factors that affect the workload allocation process. There is only limited research into gender differences in workload allocation. One notable exception is Hardies et al. (2021), who show that female partners receive higher compensation but are less likely to be assigned to prestigious clients when working in male-dominated audit firms. Our study differs from Hardies et al. (2021), because we do not examine specific types of clients but look at broader differences in workload allocation. Taken together, the findings from Hardies et al. (2021) and our own results suggest that female auditors may receive fewer prestigious clients, potentially due to being allocated fewer clients overall.

We further contribute by showing gender differences in the workload allocation process. More specifically, female auditors are associated with lower levels of workload compared to their male counterparts, both in their current portfolio as well as when it comes to new client allocations. While one would expect audit firms to try to balance the workload among auditors, such a balance does not exist when one considers workload allocation. This problem exists both in Big 4 and Non-Big 4 firms and is most pronounced at the earlier career stages.

It is important to stress that these workload differences across gender have important consequences for audit quality. Drawing on the entire Belgian audit market, our study provides unique empirical evidence on whether systematic differences in workload allocation affect audit quality. An excessive level of workload can be an important risk factor to the quality of engagement that auditors provide. Second, prior literature finds that female partners offer superior quality, but only for certain types of clients (e.g., high-risk or important clients) (Almer et al., 2021; Hardies et al., 2016; Harymawan et al., 2019; Yang et al., 2018). We contribute to this ongoing debate on why female auditors have a different effect on audit quality, by showing that different amounts of workload might explain these quality differences.

Lastly, our results can bring insights to audit firms and audit regulators in terms of gender inequality, client allocation, auditor portfolio management, and audit quality control systems. Our results suggest that audit firms should be particularly aware of the structural and cultural barriers that affect women at the beginning of their careers. Our results furthermore suggest that serving a large number of clients reduces audit quality. However, we are not suggesting that audit firms should blindly set upper limitations on auditor portfolios or allocate more

clients to female auditors. Instead, our results on workload allocation suggest that audit firms should be cautious about the negative effect of workload when auditors, especially auditors who manage the audit team, handle too many clients. Audit firms need to judge whether such an extensive portfolio is manageable at the individual level. Internal control mechanisms within audit firms can also monitor and manage the risk portfolio of an auditor, and potentially can detect certain biases across gender. Audit firms may further need to explore if a more equal spread of workload can offer higher audit quality and consider reallocating or reassigning some clients when audit quality cannot be guaranteed.

The remainder of the paper is as follows. Section 2 provides some background on gender differences and workload allocation. We also develop our hypotheses in Section 2. In Section 3, we describe our sample and the research method. Section 4 presents the primary results. The supplementary and sensitivity analyses are presented in Section 5. Section 6 offers a conclusion.

2. Background and hypotheses development

2.1. Background on gender effects and workload allocation

The workload allocation in audit firms to date has received scant attention (Lennox & Wu, 2018). The determination process of how to assign the right engagement auditors to the right client is, to a large extent, still a black box. Audit firms not only need to consider auditors' expertise, specific knowledge, and timing, but they should also consider maintaining an appropriate workload balance among the auditors they employ. Yet, this determination of workload may not be objective, as it is often an outcome of a negotiation influenced by the audit firm's judgment and the preferences of the auditors. We argue that the outcome of this

workload allocation process may be different for males and females due to structural and cultural barriers that differently affect males and females.

While gender seems to affect audit outcomes[4], research about why female auditors sometimes outperform their male counterparts is largely absent. We argue that these gender-related differences in audit quality might be explained by the different workload allocations of female auditors. Research into gender differences in workload allocation is scarce. One notable exception is Hardies et al. (2021), who show that female partners more often receive non-prestigious clients when working in male-dominated audit firms. However, broader differences in workload between male and female auditors have received little attention. Therefore, this study addresses this gap and focuses on the auditors' total workload (i.e., their entire portfolio) and investigates whether female auditors have a lower workload compared to male auditors and whether or not this systematic difference affects audit quality.

First, we investigate whether female and male auditors have different levels of *total workload*, as measured by a) the number of engagements allocated to each engagement auditor and b) the summed total assets of each auditor's portfolio. This workload is the direct outcome of workload allocation decisions. The workload an auditor receives is critical for both female and male auditors to develop expertise and management skills (Anderson, 1982; Anzai & Simon, 1979; Choo, 1996; Bonner & Lewis, 1990).

[4] Prior literature has examined the performance of female auditors in terms of audit quality and audit fees. The results show that female auditors perform better than male auditors, but only under certain conditions. For instance, female partners tend to deliver higher audit quality for high-risk or important clients (Hardies et al., 2016; Harymawan et al., 2019) but deliver lower audit quality when clients have low audit risk (Yang et al., 2018).

Second, we anticipate that female and male engagement auditors may have different levels of *new workload*. Auditors can extend their portfolio by bringing more new clients into their portfolio or by accepting the allocation decision made by the audit firm's board. A high degree of interaction with new clients provides greater opportunities to extend social networks, acquire experience, and develop managerial skill sets (Abdolmohammadi et al., 2004). This can also help auditors maintain competitive advantages, bargaining positions, and even high economic advantages in audit firms (Kacanski et al., 2021; Knechel et al., 2013; Løwendahl et al., 2001).

Third, we investigate whether total workload affects audit quality and whether gender affects audit quality after controlling for workload. By interacting with different clients, auditors can learn to perform the job better by acquiring different skill sets at each engagement. However, high levels of workload can also lead to people sacrificing diligence on their job, such that audit quality might be sacrificed (Goodwin & Wu, 2016; López & Peters, 2011; Persellin et al., 2019). Workload may constitute additional risks to audit effectiveness and efficiency (Lindberg & Maletta, 2003; PCAOB, 2014, p. 26). Hence, we argue that systematic differences in workload allocation between female and male auditors could affect audit quality (Breesch & Branson, 2009; Hardies et al., 2016; Harymawan et al., 2019; Yang et al., 2018).

2.2. Workload allocation differences across female and male engagement auditors

We anticipate that female engagement auditors will be associated with a lower level of workload because of structural and cultural barriers that female audit partners face, based on the affinity bias in audit firms, work-life balance pressures, status recognition concerns, and the different evaluation standards that female auditors may experience on the work floor.

First, prior sociology literature shows that women in the workforce may have less authority on the job. Even when women hold positions of authority, these positions are often lower in the hierarchy (DiTomaso et al., 2007). This finding aligns with a glass ceiling effect within audit firms: while the male/female ratio is balanced at lower levels of the organization, this difference is skewed towards men at the top of the company[5]. This male-dominated leadership may result in an affinity bias that allows powerful men at the top to gravitate toward the people or groups they subconsciously connect with (McPherson et al., 2001). Specifically, to maintain their exclusive group, male-dominated leadership may subconsciously share more interests and provide more support to their male colleagues. This affinity bias can be exacerbated when women are less likely to take part in such exclusive groups, preventing them from reaching the top (Evans & Maley, 2021; Hardies et al., 2013). For instance, a study by Hardies et al. (2021) shows that in male-dominated audit firms, male partners often receive the more prestigious clients and assign less prestigious clients to their female counterparts. As a result of this, resources may be skewed towards male auditors, and barriers may exist for female auditors to experience an equal level of support. This unbalanced support and skewed resource allocation may translate into different portfolio development for female auditors compared to male auditors, resulting in different levels of workload. Thus, we anticipate that while male and female auditors should be able to handle similar levels of workload, the male-oriented

[5] In recent years, more than half of accountants and auditing are women in the U.S., which is a dramatic increase from 39% in 1983 to 62% in 2021. The number seems that women have already successfully entered and made throughout this male-dominated industry. However, women are still shut out of leadership positions, and only around 32% of female auditors represent CPA firms according to U.S. statistics, which is not consistent with the number of female employees in accounting professions.

culture may lead to male auditors receiving more clients than their female counterparts. Such biases are likely affecting the female auditor's entire career.

Second, female auditors may also self-select to engage with fewer clients because of the pressure of work-life balance. Women perceive more cultural pressure from society and family: they often interact with other parts of their lives while working, and their non-work life is often perceived as important as their work life (Powell & Mainiero, 1992). As a result, compared to male auditors, female auditors may be less busy with their career advancement because of work-life balance conflicts (Jonnergård et al., 2010). While female engagement auditors may have broken through the glass ceiling as "director" or "partners" and are likely to be as ambitious as their male colleagues, they can still perceive work-life balance pressures, which might prevent them from taking up many clients (Vianen & Fischer, 2002). Because experience likely correlates with different stages of personal life priorities, these work-life balance pressures are likely the strongest at the beginning of the auditor's career.

Third, compared with female auditors, male engagement auditors may be more ambitious in extending their portfolio. Huberman et al. (2004), in a cross-country experiment, find that men perform more aggressively and react more strongly to status symbols than women. Men also more often compete for status (Gneezy et al., 2003). This status-seeking behavior can be reflected in male auditors' pursuit of extending their portfolios. That is, male auditors may be more likely to bring more clients into their portfolio with less consideration of the portfolio risk. A big portfolio that generates extensive audit fees increases the visibility of the auditors among the other senior auditors, which may bring an individual a higher level of status,

increasing the auditor's credibility within the audit firm (Gustafsod, 1998; Pham, 2005). In addition, an extensive network of clients can help engagement auditors attract new clients, which can help them showcase their value for audit firms. Thus, we anticipate that male auditors may compete more to extend their portfolio, resulting in an unbalanced workload across genders.

Finally, different evaluation standards may also apply to female auditors compared to male auditors. That is, female auditors' performance might be assessed more strictly compared to male colleagues (Bauer & Baltes, 2002; Quadlin, 2018; Rivera & Tilcsik, 2019). Therefore, female engagement auditors may focus more on "doing the job well" rather than extending their personal network by adding more clients to their portfolio (Hetty van Emmerik et al., 2006; Klyver & Terjesen, 2007). Conversely, for male engagement auditors, the revenue-generating process might be valued more positively, leading them to extend their portfolio to a large set of clients, even though this might endanger audit quality. This potential difference in evaluation standards may encourage female auditors to focus more on providing better audits by consciously controlling the number of clients in their portfolios. Therefore, they may constrain their portfolio to a more manageable set, resulting in a lower workload than their male counterparts.

Given the factors above, we predict our first hypothesis:

H1a: Female engagement auditors are associated with lower workload levels than male auditors.

H1b: Female engagement auditors are associated with fewer new clients compared to male auditors.

2.3. Workload and audit quality

Engaging with more clients plays a key role in developing an auditor's expertise and specialization (Anderson, 1982; Bonner & Lewis, 1990; Choo, 1996). For instance, by interacting with clients, auditors develop professional knowledge and skill sets in the area where they are seeking to position themselves. However, if the workload is very high, the auditors might have to cut corners and sacrifice certain audit procedures, which may hamper audit quality. For engagement auditors who lead the audit teams, the increase in the number of clients can also pose a threat to their professional skepticism because they cannot devote sufficient time and effort to get sufficient evidence to support their judgment decisions. It can also encourage auditors to sacrifice auditor professional skepticism by strongly relying on client-provided evidence and by not scrutinizing the evidence in sufficient detail, as more tasks need to be handled within the same working hours (Bierstaker & Wright, 2001; Munro & Stewart, 2011). They may also be more likely to act less on doubtful evidence, accept weak client explanations, and factor in risk to a lesser extent when they face time-related pressure (Coram et al., 2004; Gundry & Liyanarachchi, 2007). This skeptical judgment is important for audit quality (Nagy, 2005), fraud risk assessments (Carpenter & Reimers, 2013; Payne & Ramsay, 2005), and evidence assessment (Hurtt et al., 2008).

Additionally, higher levels of workload can also lead auditors at a lower hierarchy to compromise on audit efforts when they feel the engagement auditors for whom they work are constrained in terms of time. A reduction in the interaction and communication between higher-ranked auditors and relatively lower-ranked auditors is possible with an increased number of clients in portfolios from higher-ranked auditors. Fewer interactions can induce more

obedience pressure. DeZoort & Lord (1994) document that auditors are more likely to breach their professional standards and less likely to question their superiors' behavior when they face obedience pressure from superiors. Therefore, a high workload of engagement auditors can contribute to this audit quality-threatening behavior. In other words, while a certain number of clients can be good for developing expertise, we suspect that higher levels of workload might lead people to sacrifice audit quality. Therefore, we formulate the following hypothesis:

H2: A higher level of workload of an engagement auditor is negatively associated with audit quality.

Next to exploring our hypothesis, we also analyse whether the gender effect on audit quality (i.e., female auditors delivering higher audit quality) still materializes when we control for the workload. We suspect that the gender-related workload difference is an important reason why female auditors perform better. That is, compared to female engagement auditors, male auditors might have (too) many clients, which might hamper their ability to deliver high audit quality (i.e., financial reporting quality of their clients). Conversely, the workload of female auditors might be more manageable, which can explain why they render better audit quality.

RQ: Do female auditors provide higher audit quality when controlling for differences in workload?

3. Research context, data, and design

3.1 Data selection

We use data from the Belgian setting for our study because in Belgium, all public and private firms of a certain size are required to have an auditor and are required to publish their

financial statements with the Belgian National Bank.[6] In addition, the names of the audit firm and the engagement auditor are disclosed in these financial statements, allowing us to observe each engagement auditor's entire portfolio and get a complete picture of an auditor's workload.

Our sample collection starts with all audited firms in Belgium from 2013 to 2020, for which we retrieve information on their auditors' identity from the historical copies of the Bel-first data.[7] [8] This resulted in 891 unique engagement auditors. We exclude 230 single practitioners since there is no workload allocation process within single practitioners' firms.[9] This yields 661 engagement auditors who audit 28,297 unique clients from 2013 to 2020. We further remove four auditors for whom all clients have missing total assets information.[10] We then collect the auditor's year of qualification as a statutory auditor from the Instituut van de Bedrijfsrevisoren[11] and remove 55 auditors for which we could not identify their qualification

[6] Only "large" firms in Belgium are required to appoint a statutory auditor if more than one of the following criteria is exceeded or is listed on the stock exchange: a) annual average workforce: 50 employees; b) total assets: 4,500,000 EURO (since 2016)/3,650,000 EURO (before 2016); c) turnover (revenue): 9,000,000 EURO (since 2016)/7,300,000 EURO (before 2016) (Source: https://www.nbb.be/en/central-balance-sheet-office/drawing/size-criteria/size-criteria-companies). This threshold is not very high. In other words, many small private firms are still required to appoint statutory audits.

[7] Bel-first only contains their most recent value of non-historical variables. To get the completed yearly auditor information, we downloaded the historical copies of Bel-first stored in KU Leuven.

[8] We employ several strategies in data processing to ensure data validity. First, Bel-first stores the historical copies in yearly archives and these historical copies with audit information are often available with a delay (e.g., audit information for the year 2013 is stored in 2015 rather than in 2013). Therefore, we identify the accurate auditor(s) for each client in a given year by using the historical copies of one or two years following that year. Second, for the clients with missing auditor information after the first step, we follow the three-year mandates rule to identify these client audit information. That is, in Belgium, the law retains the duration of the auditor's mandate to three years for both public and private companies. For example, if a client's audit information in 2013 is absent and we find their auditors were the same in 2012 and 2014, we assume the same auditor for this client during the year 2013.

After applying these two steps, we can ensure most of the clients in the data have auditor information in a certain year. However, some clients have more than three auditors per year because of the audit switch. For these clients, we manually check and correct their audit information by reviewing their audit reports, which we retrieve from the website of the Belgian National Bank. Moreover, after applying each step, we also randomly select clients and manually check their audit reports to ensure the accuracy of our data.

[9] Single practitioners are auditors who often set up a company under their own name and thus do not belong to a firm.

[10] Those four auditors only have maximum of two clients per year according to our calculations, indicating they have very small portfolio.

[11] Instituut van de Bedrijfsrevisoren only provides information on active auditors. For non-active auditors who have been removed from the register, we rely on historical records to gather the relevant data.

year, resulting in 602 engagements and an auditor-year-firm sample of 3,852 auditor-year observations. We identify auditor gender by *Namsor*[12], an application that predicts gender based on the country of origin and first and last name. Furthermore, two native speakers reviewed and corrected the classification results. For auditors whose gender is identified as uncertain, we confirmed their gender through online resources manually (e.g., LinkedIn and bios on audit firms' websites).

For the estimation of abnormal accruals, we identify 269,235 client-year observations for 28,297 unique clients[13]. We eliminate observations with missing information on the variables needed for calculating abnormal accruals (n = 82,345). Then, we remove observations without industry code and clients in industries with less than six observations per industry-year (n = 326), resulting in a sample of 186,564 for which we calculate abnormal accruals.

Financial information for engagement auditor's clients is also retrieved from Bel-first, resulting in a sample of 164,987 client-year observations. From this sample, we remove observations with missing total assets (n = 10,571) and drop observations without auditor experience information (n = 1,781). The clients with missing audit fees (n = 34,432) and clients active in the finance and insurance industry are excluded from our data (n = 10,987).[14] We also exclude repeated observations (n = 3). The final sample for our *H1* is 3,852 auditor-year observations, and for our *H2* is 107,231 client-year observations. Table 2 presents the sample selection process.

[12] *Namsor* is an online application that allows us to check audit auditor's name for their gender. Link: https://namsor.app/

[13] Some clients do not have auditor information in the sample.

[14] We employed Fama-French 5 industry classification as a reference to reclassify the industry code of NACEBEL.2008. The industry with financing and insurance activities is excluded before the reclassification.

3.2 Empirical models and variables description

We test *H1a* with the following model (1):

$$WORKLOAD_{i,t} = \alpha_0 + \beta_1 * GENDER_i + Controls_{i,t} + Fixed\ Effects + \varepsilon \quad (1)$$

This model tests whether the workload (*LOG_NUM* & *LOG_TOTAL_ASSETS*) of engagement auditor *i* in period *t* relates to the gender (*GENDER*) of auditor *i*. We use two ways to measure an auditor's workload. First, we calculate *the number of clients per auditor per year.* To measure an auditor's client portfolio as completely as possible, we use the full sample to count the number of clients, i.e., including clients in the financial and banking industry. *LOG_NUM* is measured by logging the *number of clients per auditor per year* [15]. Second, because audit clients vary in size, the number of clients may inaccurately reflect an auditor's true workload. To address the possibility that some auditors may have many small clients, we also use *the summed total assets of clients per auditor per year* as an alternative proxy for workload. *LOG_TOTAL_ASSETS* is measured by logging the summed total assets of clients per auditor served per year. *GENDER* is our variable of interest, which equals one for a female auditor and zero for a male auditor. Regarding *H1a*, we expect female auditors to have a lower workload, and we predict a negative coefficient on *GENDER*. This model is estimated using ordinary least squares (OLS) with year-fixed effects.

[15] We use the number of clients for several reasons. First, unlike prior literature with the U.S. data, our data enable us to observe the auditor's private firm clients, which makes it possible to estimate the auditor's accurate workload by counting the number of clients in their portfolio. Second, the time and effort one auditor exerts on each of their clients will also depend on the number of clients, as each client needs certain effort regardless of its size. Third, the number of clients can influence the complexity in a multi-client environment. Dividing attention between many clients may lead to memory-related biases, potentially affecting the evaluation of each client.(Grossman et al., 2012) and lead to contrast effects on auditor's judgments (Bhattacharjee et al., 2012). Last, using audit fees to capture workload is inappropriate as prior literature shows that females often receive an audit fee premium in Belgium (Hardies et al., 2015). Therefore, we use the number of clients per auditor per year to proxy for the auditor's workload.

Because auditors with large clients may have a similar workload as those with many small clients, we control for the size of the median client in each auditor's portfolio (*SIZE_MEDIAN*) in the models with *LOG_NUM* as the dependent variable[16]. *SIZE_MEDIAN* is measured by the median value of the client's logged total assets for each auditor's portfolio per year. Considering that the number of clients that an auditor can serve may be reduced when the clients are risky, we also include risk characteristics of the auditor portfolio: proportion of negative equity clients (*RISK_NEG_EQU*), the proportion of clients with a high risk of bankruptcy in terms of z-score (*RISK_ZSCORE*), and the proportion of public clients in the portfolio (*PRO_PUB*). In addition, we control for the financial health of the clients in the auditor portfolio because auditors who have financially healthy clients may be more likely to have more clients in their portfolios. Following Gaeremynck et al. (2008)'s measurement of audit firms' portfolio characteristics, we also add control variables for the financial health of each auditor's portfolio using two different perspectives: profitability (*ROA_MEDIAN, CASH_MEDIAN,* and *OCF_MEDIAN*), and solvency (*AUTO_MEDIAN*). The former reveals the performance of the median clients in an auditor's portfolio; the latter reveals the auditor's long-term financial risk (Gaeremynck et al., 2008). Moreover, we control for the auditors' experience (*LOG_EXPERIENCE*), which is measured by the logged number of years the auditor has been officially registered. We also control for an auditor's industry focus by using the Herfindahl-Hirschman Index ($HHI = \sum_{i=1}^{N} PS_i^2$). We calculate the *HHI* according to the

[16] As *LOG_TOTAL_ASSETS* already accounts for client size, we do not include *SIZE_MEDIAN* in the models with *LOG_TOTAL_ASSETS* as a dependent variable.

portfolio share percentage of industry *n* in the portfolio of auditor *i* (*PS*)[17]. We define the auditor's portfolio as industrial concentration if their portfolio *HHI* is above the median *HHI* of the firm (*IND_CON*) [18]. Finally, we include *BIG4,* which is equal to one if the auditor works in a Big 4 firm, and zero otherwise[19].

We then test *H1b* with the following model:

$$LOG_NEW_CLIENTS_{i,t} = \alpha_0 + \beta_1 * GENDER_i + LAG_Controls_{i,t-1} + Fixed\ Effects + \varepsilon \quad (2)$$

This model tests whether the number of new clients assigned to an auditor (*LOG_NUM_NEW* & *LOG_TOTAL ASSETS_NEW*) in period *t* relates to the gender (*GENDER*) of the auditor. In line with *H1a*, we measure the new workload based on new clients *(LOG_NUM_NEW)* and new assets audited (*LOG_TOTAL_ASSETS_NEW*). Regarding *H1b*, we expect that female auditors will have fewer new clients in their portfolio. We, therefore, predict a negative coefficient on *GENDER*. As Model 1, this model is estimated using OLS with year-fixed effects.

We believe that the assignment of new clients depends on the auditor's prior-year portfolio. Thus, we include the auditor's prior-year portfolio characteristics by lagging all control variables used in Model 1.

Finally, we test our second hypothesis (*H2)* with the following model:

$$AUDIT\ QUALITY_{j,t} = \alpha_0 + \beta_1 * WORKLOAD_{i,t} + Controls_{j,t} + Fixed\ effects + \varepsilon \quad (3)$$

For our second hypothesis, we follow prior research (Bauwhede & Willekens, 2004; Reynolds & Francis, 2000) and use financial reporting quality to proxy for audit quality since

[17] We first round the portfolio percentage into two digits and then multiply by 100 to obtain the whole number.
[18] This control is included only when workload is measured by the number of clients (*LOG_NUM*).
[19] We have some auditors that work for both Big4 and other firms at the same time. This type of auditor is still considered involved in the workload allocation process in Big4 audit firms.

"*auditors are responsible for assuring a level of financial reporting quality that exceeds mechanical compliance with accounting standards* (DeFond & Zhang, 2014, p. 281)". We measure the audit quality by the absolute value of abnormal accruals (*ABS_AB_ACC*) for client *j* in year *t* following the modified Jones' model (Dechow et al., 1995). As noted, we estimate clients' discretionary accruals using a full sample that includes clients without auditors.

In line with prior research (Choi et al., 2010; Reichelt & Wang, 2010), we control for client size (*SIZE*), whether the client is audited by a Big 4 firm (*BIG4*), the return on assets (*ROA*), the z-score (*ZSCORE*), the leverage (*LEV*), whether the client is audited by an audit firm who is an industry specialist (*SPE_FIRM*), whether the client is audited by an auditor who is an industry specialist (*SPE_AUDITOR*), for the potential difference in audit quality for negative-income reporting clients and positive income reporting clients (*NEG_INCOME*), and whether the client is publicly listed (*PUB*). We include operating cash flows (*OCF*) and scaled cash and cash equivalents (*CASH*) to control for the potential correlation between accruals and cash. We also control for the auditors' experience (*LOG_EXPERIENCE*), which is measured by the logged number of years the audit auditors have been certified as public accountants. We estimate model (3) uses OLS with year- and industry-fixed effects.[20] [21]

Table 1 in the Appendix provides more details about the measurement of all variables.

4. Primary Results

4.1 Descriptive statistics

[20] We use two types of industry codes in the model. For the variables related to the individual specialization (i.e., *IND_CON* and *SPE_AUDITOR*), we employ the Fama-French 5 industry classification. This is a broader industry code that aligns with the practice of audit firms that use broader industries than in the academic setting (Renders et al., 2022). We use the NACEBEL.2008 as the industry code for the variable *SPE_FIRM*, which refers to the audit firms whose market share is above 30% in a certain industry.

[21] All the continuous variables are winsorised at 1% and 99% percentile by year and industry.

Our sample consists of 112 female auditors and 490 male auditors. Female auditors thus account for 18.6% of our sample for *H1a*. Due to the lagged variables, we lose six female auditors and 17 male auditors, resulting in a smaller sample of 579 auditors for *H1b*. Table 3 presents descriptive statistics for all variables used in our analyses.

Panel A of Table 3 presents the characteristics of the auditor portfolio. The average workload of engagement auditors is 40.300 clients (*NUMBER*) and 2,233,130,896.000 euros in total assets of those clients (*TOTAL_ASSETS*). Auditors' average experience is 17.700 years. Panel A also tabulates the portfolio composition by gender. Consistent with our expectations, male auditors have significantly more clients and more audited assets, providing initial support for our hypothesis that male auditors have a higher workload than female auditors (42.097 vs. 32.003 in terms of the number of clients, p-value < 0.001; 2,357,871,049.115 vs. 1,639,636,267.146 in terms of the summed total assets of the portfolio, p-value < 0.001). Female engagement auditors have less experience than male auditors (15.063 vs. 18.245, p-value < 0.001). Male auditors also have riskier portfolios than female auditors per year regarding *RISK_ZSCORE* (0.350 vs. 0.311; p-value = 0.020). In addition, female auditors are more likely to have an industry-concentrated portfolio than male auditors: 54.7% of female auditors have concentrated portfolios compared to 48.6% of male auditors (p-value = 0.004).

Panel B of Table 3 presents the differences in client characteristics between female and male engagement auditors. This panel confirms that female auditors have larger clients than male auditors (16.200 vs. 16.100 regarding logged total assets of the clients; p-value < 0.001). In addition, clients of female auditors are significantly less profitable than those of male

auditors (0.015 vs. 0.019 in terms of return on assets (*ROA*); p-value = 0.044). However, we also note that clients of female auditors are more highly leveraged (0.719 vs. 0.714; p-value = 0.001) and more likely to be publicly listed (0.007 vs. 0.006; p-value = 0.087). In addition, clients of female auditors are more likely to be audited by industry specialist audit firms (0.018 vs. 0.014; p-value = 0.002). Yet, clients of male auditors are more likely to be audited by industry specialist auditors (0.243 vs. 0.276; p-value < 0.001). Clients of female auditors are more likely to be audited by industry specialist audit firms (0.018 vs. 0.014; p-value = 0.002)

Table 4, Panel A presents the correlation matrix for the variables used in the portfolio analysis. Consistent with our hypothesis *H1a*, we find a negative correlation between female auditors (*GENDER)* and workload (*LOG_NUMBER:* -0.099*; LOG_TOTAL_ASSETS*: -0.055). Regarding our two proxies of auditor's workload, we notice that *LOG_NUMBER* is negatively correlated with auditor's experience (*EXPERIENCE*: -0.050), the size of the portfolio (*SIZE_MEDIAN*: -0.201), the profitability and the portfolio (*ROA_MEDIAN*: -0.058; *CASH_MEDIAN*: -0.361; *OCF_MEDIAN*: -0.060), and our measure of portfolio concentration (*IND_CON*) (-0.352). In addition, we find that *LOG_TOTAL_ASSETS* is positively correlated with the proportion of public clients in the portfolio (*PRO_PUB*: 0.089). Yet, it is negatively correlated with the auditor's audit experience (*EXPERIENCE*: -0.083), the profitability of the portfolio (*ROA_MEDIAN*: -0.037; *CASH_MEDIAN*: -0.359; *OCF_MEDIAN*: -0.070), and our measure of portfolio concentration (*IND_CON*) (-0.182), which is in line with the results of *LOG_NUMBER*.

Panel B of Table 4 presents the correlation matrix for the audit quality analysis. Workload (*LOG_NUMBER* & *LOG_TOTAL_ASSETS*) is positively correlated with absolute discretionary accruals (*ABS_AB_ACC*) (*LOG_NUMBER*: 0.050; *LOG_TOTAL_ASSETS*: 0.056), which suggests that audit quality may be negatively associated with workload. The other controls are all significantly correlated with the audit quality indicator. [22]

4.2 Regression results

4.2.1 Workload analysis (H1a)

Table 5 presents the regression results of the portfolio analysis. The coefficient on *GENDER* is negative and significant in the full sample (Column 1: -0.232, p-value < 0.001; Column 4: -0.268, p = < 0.001). In economic terms, the portfolios of female auditors consist of about 20.7% fewer clients. In addition, the workload of female auditors, in terms of summed client total assets, is on average approximately 23.5% smaller than that of male auditors. This supports the prediction in *H1a* that female auditors have fewer clients or lower levels of workload compared with their male counterparts.

With respect to our control variables, we find that auditors from Big 4 firms have a higher level of workload (Column 1: 0.571, p-value < 0.001; Column 4: 1.718, p-value < 0.001). Furthermore, auditors with a higher proportion of public clients tend to manage portfolios with fewer clients on average (-1.314, p-value = 0.011); but these portfolios are substantially larger in terms of audited total assets (3.229, p-value < 0.001). Conversely, the coefficients on

[22] We also compute the variance inflation factors (VIF) in the portfolio analysis and audit quality analysis models. The results show that for most of the variables VIF factors are smaller than 2.000. However, for two risk factors *RISK_NEG_EQU* and *RISK_ZSCORE* in Big 4 sample, the VIF is above 5.000, suggesting those two predictors are moderately correlated. Because these two factors capture different aspects of risk factors of an auditor portfolio, we decide to retain them in the model but acknowledge this correlation as a limitation. To ensure robustness, we re-estimated the models for portfolio analysis (*H1a* and *H1b*) excluding one of the two variables at a time. The inferences remain unchanged, suggesting that our main conclusion are not driving by the multicollinearity.

IND_CON show that auditors have fewer clients when their portfolios are industry-focused (Column 1: -0.785, p-value < 0.001). In addition, the coefficients on *ROA_MEDIAN*, *OCF_MEDIAN,* and *CASH_MEDIAN* suggest that auditors' workloads are negatively associated with their clients' current financial performance. The coefficient on *EXPERIENCE_LOG* is significantly positive, indicating that auditors with more experience are more likely to manage a larger portfolio (Column 1: 0.313, p-value < 0.001; Column 4: 0.475, p-value < 0.001).

We then run our model for Big 4 and non-Big 4 firms separately. Big 4 firms may have a more centralized approach to workload allocation than non-Big 4 firms, which may mitigate the effect of affinity bias towards men. Specifically, a more centralized allocation system may reduce the opportunities for male Big 4 auditors to intervene in the workload allocation process. In addition, because Big 4 firms have more clients than Non-Big 4 firms, the affinity bias towards men may further be mitigated, as there will be more resources waiting for distribution. Our results show that the portfolios of female auditors contain fewer clients (Column 2: -0.200, p-value = 0.004; Column 3: -0.249, p-value < 0.001) and are smaller in terms of total assets (Column 5: -0.367, p-value = 0.001; Column 6: -0.172, p-value = 0.067) for both Big 4 and Non-Big4 firms, indicating that gender differences still exist in both Big 4 and non-Big 4 firms.[23]

4.2.2 New client allocation (H1b)

[23] We also run a test to assess whether the effect of *GENDER* differs between Big 4 and non-Big 4 firms. Specifically, we re-estimate Model (1) on the full sample and include an interaction term between *GENDER* and *BIG4*, which represents the difference in the gender effect on workload between Big 4 and non-Big 4 firms. The results show that there is no differences between Big 4 and Non-Big 4 firms in terms of the gender effect on workload.

The results documented thus far could be the result of historical client allocations. To examine whether gender differences also exist for new clients, we also examine new client allocation to test *H1b*. Table 6 presents the results of this analysis. We find a negative and significant coefficient of *GENDER* in Column 1 (-0.162, p-value < 0.001) and Column 4 (-1.287, p-value < 0.001), indicating that female auditors audit fewer new clients (15.0% fewer in terms of the number of clients and 72.4% fewer in terms of the audited new assets). This result supports our prediction in *H1b* that gender influences the allocation process of new clients. These results also show that the gender gap in workload is not only driven by historical client allocation but also negatively affects current workload allocation.

We further test whether the allocation of new clients is different for Big 4 and non-Big 4 firms. We, therefore, rerun Model 2 on the subsamples of Big 4 firms and non-Big 4 firms. The results show that the coefficients on *GENDER* in Columns 2, 3, 5, and 6 are both significant and negative, implying that female auditors are more likely to have fewer new workload in both Big 4 and non-Big4 firms (Column 2: -0.166, p-value = 0.019; Column 3: -0.169, p-value = 0.004; Column 5: -1.218, p = 0.007; Column 6: -1.379, p-value = 0.004).

4.2.3 Audit quality analysis (H2)

We next examine whether workload negatively affects audit quality. The results in Columns 1 and 2 of Table 7 reveal that the auditors' workload, as measured by *LOG_NUM* and *LOG_TOTAL_ASSETS*, is a significant determinant of audit quality after controlling for the client characteristics. The estimated coefficient of 0.006 in Columns 1 and 2 means that, on average, the absolute abnormal accruals increase by 0.6% when the number of clients in the auditor's portfolio increases by 1%. Thus, we conclude that a higher workload is negatively

associated with audit quality, measured by the absolute value of abnormal accruals. Our results are also consistent with previous literature, which suggests that audit quality can be impaired when auditors are busier due to a higher number of clients (Cheng et al., 2021; Goodwin & Wu, 2016; Sundgren & Svanström, 2014).

The coefficients on the control variables are consistent with previous literature, except for *BIG4* and *SPE_FIRM* (Choi et al., 2010; Reichelt & Wang, 2010), which are significantly positive, suggesting Big 4 firms and firms that are industry specialists are not always of higher quality than other small auditing firms in Belgium[24].

We further rerun Model 3 on the subsamples of Big 4 firms and non-Big 4 firms and find that workload affects audit quality in Big 4 and non-Big 4 firms. The coefficients on *LOG_NUM* in Columns 3 and 5 indicate that a higher workload, measured by the number of clients, is associated with lower audit quality in both Big 4 and non-Big 4 firms (Column 3: 0.006, p-value < 0.001; Column 5: 0.006, p-value < 0.001). In addition, the coefficients on *LOG_TOTAL_ASSETS* in Columns 4 and 6 indicate that a higher workload regarding the summed portfolio total assets is negatively associated with audit quality (Column 4: 0.008, p-value < 0.001; Column 6: 0.006, p-value < 0.001).

4.2.4 Gender, workload, and audit quality (RQ)

[24] Although bigger audit firms are usually considered to be superior in terms of audit quality (Deangelo, 1981), this finding is consistent with other studies in the Belgian or European setting ((Bauwhede & Willekens, 2004; Van Linden & Hardies, 2018).
The significant and positive coefficient on *SPE_FIRM* is also not in line with previous U.S. audit quality studies. Belgium is a private-demined audit market. The audit firm can be an industry specialist only when it has a lot of private clients in that industry. This could increase the overall audit auditors' workload in these firms and thus reduce audit quality.

Prior literature has shown that females provide higher audit quality (e.g., Hardies et al., 2016; Harymawan et al., 2019). Since our results indicate that females have a lower workload and that this lower workload is associated with higher audit quality, we investigate whether the effects of female audit quality are driven by differences in workload. We first test the direct effect of gender on audit quality by running a regression of *GENDER* on *ABS_AB_AC*. The results in Table 8, Column 1 show that, consistent with prior literature, female auditors provide a higher level of audit quality (-0.003, p-value = 0.070). Next, we include workload (*LOG_NUM* & *LOG_TOTAL_ASSETS*) to investigate whether the female audit quality effect is driven by differences in workload. Columns 2 and 3 of Table 8 show that the coefficient on *GENDER* is negative but insignificant (Column 2: -0.002, p-value = 0.298; Column 3: -0.001, p-value = 0.549), suggesting that gender is not associated with audit quality when controlling for auditor workload. Combined with our findings that female auditors have a lower workload (*H1a*) and that lower workloads are associated with higher audit quality (*H2*), these results suggest that female auditors provide higher quality not because of inherent differences between males and females but because they audit fewer clients.[25]

We then run this model for Big 4 firms and Non-Big 4 firms separately. Our results in Column 4 of Table 8 suggest that Big 4 female auditors are more likely to deliver higher-quality audits (-0.006, p-value = 0.013), but this effect is slightly weaker (-0.005, p-value = 0.055) after adding workload (*LOG_NUM*) to the model. This gender effect even disappears after

[25] Unfortunately, we cannot directly run the Sobel test or mediation test to investigate the mediation effect of workload on the association between gender and audit quality because we use different samples in Model 1 and Model 3.

adding workload regarding the summed total assets of the auditor's portfolio (Column 6: 0.003, p-value = 0.265). These findings are broadly consistent with the results in the full sample that the higher quality delivered by female auditors can (partially) be explained by their lower levels of workload.

In addition, the coefficient of *GENDER* on workload is insignificant in Column 7, suggesting that the non-Big 4 female auditors do not have a higher quality than their male counterparts. We posit that this finding can be explained by the relatively smaller number of clients audited by non-Big 4 auditors. That is, while female auditors have fewer clients than male auditors in non-Big 4 firms, male auditors in non-Big 4 firms still have fewer clients than male Big 4 auditors. That is, their workload is still manageable compared with the workload of engagement auditors in Big 4[26]. Overall, we fail to find strong effects of gender on audit quality when controlling for workload for non-Big 4 firms.

5. Supplementary and sensitivity analysis

5.1 The effect of the auditor's experiences and gender

We then examine whether experience influences the effect of gender on workload. In general, a more experienced auditor has a higher reputation, bargaining power, and expertise. Our findings in Table 6 confirm that experience is positively associated with workload. However, female auditors tend to have fewer years of experience than their male counterparts, which may contribute to observed gender differences in workload. Beyond this, work-life balance preferences and career progression dynamics may play a role. Experience may

[26] We run the t-test for male auditors' average workload between Big 4 and non-Big 4. The results show that the average number of clients for male auditors in non-Big4 is 34.3, which is significantly lower than those of male auditors in Big 4 (54.9) (p-value < 0.001).

correlate with different stages of personal life priorities, which could vary by gender and influence workload decisions. Such cultural barriers may limit female auditors from accumulating experience and taking on larger portfolios at the start of their careers. Such differences may become smaller as female auditors progress in their careers.

To test this possibility, we interact *GENDER* with *EXPERIENCE* in Model 1 and calculate the Estimated Marginal Means (EMMs) of workload at different levels of *EXPERIENCE* by *GENDER*, and test for the effect of *EXPERIENCE* separately for male and female auditors with a simple slope analysis.

First, we find a significant positive coefficient of *GENDER*EXPERIENCE* on workload in both Big 4 and non-Big 4 firms (Table 9, Panel A & Table 10, Panel A), which signifies that the gender difference in workload becomes smaller as experience increases. The results of EMMs (Table 9, Panel B, Full Sample & Table 10, Panel B, Full Sample) show that the estimated logged number of clients (logged total assets of portfolio) for female auditors with *EXPERIENCE* one standard deviation above the mean is 3.380 (20.770); for female auditors with *EXPERIENCE,* one standard deviation below the mean is 2.651(19.775). These results indicate a substantial increase in workload for female auditors as their experience increases, whereas the corresponding increase for male auditors is much smaller.[27] As a result, the workload is significantly higher for males compared to females at the beginning of their careers, but this gap narrows over time and eventually disappears at higher experience levels.

[27] For male auditors with more *EXPERIENCE*, the estimated logged number of clients (logged total assets of portfolio) is 3.254 (20.575), while male auditors with lower *EXPERIENCE* have an estimated workload of 3.144 (20.393).

This is further confirmed by Table 9, Panel C, Full Sample and Table 10, Panel C, Full Sample, which show that the slope of *EXPERIENCE* on workload for female auditors is significantly larger than for male auditors (Table 9, difference = 0.033, p-value < 0.001; Table 10, difference = 0.044, p-value < 0.001). These results support the notion that experience could mitigate the negative association between female auditors and workload but also suggest that female auditors have to accumulate longer working experience compared with their male colleagues to get to a similar level of workload. In addition, we find that female auditors eventually have a comparable level of workload to their male counterparts when they have accumulated sufficient experience. Our additional analysis also shows that the gender differences in terms of workload disappear when auditors are experienced (experience in excess of 23.2 years regarding *LOG_NUM*; experience in excess of 22.5 years regarding *LOG_TOTAL_ASSETS*). However, the population of experienced female auditors is very small; 33.0% of female auditors have experience of more than 20 years.

In addition, we observe differences between Big 4 and non-Big 4 firms. Figures 1 and 2 visualize this interaction effect between *GENDER* and *EXPERIENCE* on workload. Figure 1 shows that some female auditors in non-Big 4 firms obtain similar workloads regarding *LOG_NUM* compared to male auditors only when they are very experienced (with around 30 years of experience). Conversely, some female auditors in Big 4 firms already catch up with male auditors' workload earlier in their careers and even exceed the workload of male auditors when they are highly experienced (see Figure 2; experience > 25 years). However, we find that among both Big 4 and non-Big 4 firms, female auditors reach a comparable workload in terms

of the summed total assets of their portfolios once they have accumulated around 25 years of experience.

These findings suggest that there are no systematic biases in workload allocation in audit firms across the entire career span. Rather, differences between males and females are concentrated in the earlier career stages. This pattern may be driven by gender-specific work-life choices or by biases that disproportionately affect female auditors at career entry. Although female auditors eventually catch up in terms of workload, the initial gap may have long-lasting consequences for portfolio development and experience accumulation. Therefore, audit firms need to be particularly aware of structural and cultural barriers that affect females at the beginning of their careers.

5.2 Robustness tests

To test the robustness of our results, we implement several sensitivity checks with respect to the dependent, test, and control variables.

First, our main tests of the gender effect on auditor workload with *LOG_TOTAL_ASSETS* as the dependent variable, excludes *IND_CON* in the model, because *IND_CON* is calculated based on clients' total assets and including it may introduce potential bias into the estimation. Nevertheless, we include *IND_CON* as a robustness check to verify the stability of our findings. The results remain largely unchanged. However, when focusing on the non-Big4 sample, the association between *GENDER* and *LOG_TOTAL_ASSETS* is directionally consistent (negative) but insignificant (p-value = 0.172). This finding may reflect that female auditors in non-Big4 handle fewer clients (i.e., *LOG_NUM*), but their individual clients tend to be larger. Our additional t-test supports this interpretation: the median value of portfolio client total assets is

significantly higher for female auditors compared with their male counterparts in non-Big4 firms (26,301,390.635 vs. 12,250,446.545; p-value = 0.028).

Second, a concern in examining the association between auditor gender and new client allocation is that the prior-year workload of the auditor may affect her likelihood of obtaining a new client. Auditors who are already constrained because of a high level of workload may be less likely to be assigned or attract an additional client. Although we control for these differences in the portfolio composition in our model, this may not be adequate to fully alleviate this concern. Therefore, we provide further analysis using propensity score matching (PSM) (Caliendo & Scheel-Kopeinig, 2008). We create a sample of 1,102 auditor-year observations with female and male auditors whose portfolios are similar[28]. Then we rerun Model 2 using the matched sample. The results are consistent with those in Table 6. Specifically, gender is significantly associated with a lower level of workload in both Big 4 and non-Big 4 firms.

Third, another concern is that auditors may have a large portfolio because subsidiaries are also included as separate audit engagements. For example, parent companies often share the same auditors with their subsidiaries. In Belgium, those subsidiaries exist as a legally separate entity from their parent company, with their own capital, administration, and tax obligations. From an audit engagement perspective, this means that even if the same auditor signs off for both the parent and the subsidiary, each subsidiary is treated as a separate client in our dataset.

[28] Our matching sample is based on the logit regression that estimates the likelihood of a portfolio belonging to a female auditor based on the auditor's previous year's portfolio characteristics in terms of their risk level, and financial health, including *RISK_NEG_EQU_LAG, RISK_ZSCORE_LAG, ROA_MEDIAN_LAG, AUTO_MEDIAN_LAG, CASH_MEDIAN_LAG, OCF_MEDIAN_LAG* and *PRO_PUB_LAG*. We then match each year a female portfolio with a male portfolio without replacement that has the nearest propensity score from the logit regression. By doing so, we ensures that gender comparisons are made among auditors with similar portfolio characteristics and within the same year.

However, the required workload for auditing such subsidiaries may be lower than that of a truly independent company, and our measures may overestimate actual workload. Our measure with audited total assets (*LOG_TOT_ASSETS*) already partially controls for this problem. Nevertheless, to further address these concerns, we obtained additional shareholder information from Orbis and only included unique parent companies in our data, i.e., removing subsidiaries. Our results are consistent with the main results, suggesting female auditors are associated with a lower level of workload (i.e., *LOG_NUM* and *LOG_TOTAL_ASSETS*) in both Big 4 and non-Big 4 firms[29].

Last, we consider that small audit firms may not be comparable to larger firms in the allocation process, such as the Big 4 and other mid-sized audit firms with more structured office organizations. We refine our sample by excluding observations from small firms. Specifically, we re-run our analysis after excluding audit firms with fewer than 10 auditors and, separately, those with fewer than 15 auditors. The results remain robust under these alternative samples. In particular, the association between auditor gender and workload (i.e., *LOG_NUM* & *LOG_TOTAL_ASSETS*) does not change in either direction or significance when very small audit firms are removed from the sample.

6. Conclusion

In this study, we examine how the auditor's gender influences the workload allocation process. Using data from the entire Belgian audit market, we find that female auditors have a

[29] We did not consider shareholder's information in our main analysis for two reasons. First, shareholder information of clients is not allowed to download from Bel-first, which means we could not make sure that the source of our data is consistent. Second, Orbis only provides only the latest shareholder information of clients, without any historical records. This raises a risk of measurement error, as current shareholder information may not accurately capture the clients' ownership structure in the year under study.

lower workload than their male colleagues. These differences in the auditor's portfolio are not entirely driven by historical workload allocation decisions but also by new workload allocations, as female auditors are also assigned fewer new workloads. Furthermore, gender differences in workload allocation have an impact on audit outcomes. Specifically, we find that female auditors provide higher quality, consistent with prior literature (e.g., Hardies et al., 2016; Harymawan et al., 2019). However, this effect largely disappears when controlling for the level of workload. Hence, researchers need to adequately control for workload when assessing gender differences in audit outcomes.

We further find that the gender differences in workload are most pronounced at the beginning of the auditor's career but disappear as the career progresses. This result suggests that there is no systematic bias that affects females of all experience levels. Rather, gender disparities are most pronounced in the early stages, potentially due to gender-specific work-life choices or entry-level biases affecting female auditors. Although women eventually reach comparable workload levels, the initial gap may hinder portfolio growth and experience accumulation. Audit firms should therefore be especially attentive to barriers that impact female auditors at career entry.

Our findings may help audit firms develop portfolio management strategies that dynamically monitor their auditors' portfolios, ensuring they remain manageable and guarantee the provision of high-quality audits. Furthermore, our findings open up the black box of audit firms' organizational operations by demonstrating that gender has an important effect on the workload allocation process (Francis, 2011). Furthermore, this finding may be helpful for audit

firms to foster a more inclusive culture. For example, audit firms can reassess their evaluation and promotion strategies, paying closer attention to the needs of female auditors at early career stages, and identify whether they can help in removing some of the structural or cultural barriers female auditors face. For instance, audit firms must ensure their internal evaluation is developed and implemented equitably for female and male auditors.

Our study is subject to some limitations. First, we do not have the actual total working hours for each auditor, which means we cannot observe whether the auditors are working full-time or part-time. While both female and male auditors can choose to work full-time or part-time, women's tendency to work part-time may be stronger than men's, resulting in a lower workload among female auditors, especially in the early stages of their careers. For instance, female auditors may perceive more social and family responsibility than male auditors, leading them to slow their career development to compensate for the other parts of their lives. We note that our results are broadly consistent with this explanation. However, we cannot rule out the possibility that female auditors at career entry face other biases, which may result in audit firms assigning fewer clients to them. Future survey or interview-based research could explain what is driving our results. Second, our results might be subject to some unobservable selection bias. For example, auditors involved in the firm's management may also choose to engage fewer clients. However, we could not directly control for this effect due to the lack of information on the auditor's exact role within the audit firms. Future research could consider manually collecting more auditor information, such as the auditor's position within the firm and their age, via online sources like LinkedIn. Third, it is an open question as to what extent we can

generalize the findings from a single audit market to other markets. However, we believe that if gender-based differences in workload allocation can already be observed in Belgium – a context often considered relatively gender-equal - this provides us with some confidence that the institutional features of the Belgian settings do not primarily drive our results. Furthermore, it may suggest that the mechanisms underlying these differences are likely to be present in other settings, making our results more generalizable. Lastly, our study provides opportunities for future research to go further in exploring the other elements that affect audit firms' workload allocation decisions. For example, senior auditors' bargaining power can be important in determining their portfolio and portfolio management strategies. A survey or interview of these senior auditors can examine whether the use of bargaining power affects audit firms' workload allocation process and whether such an intervention affects audit performance. In addition, it can also provide insights into whether the perception and use of bargaining power are different between female and male auditors and whether such differences affect the quantity and quality of the portfolio.

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Appendixes:

Table 1: Variable Definition

Variable Name	Variable Definition
Variables of interest	
NUMBER	The number of clients per auditor is the yearly number of clients per auditor per audit firm.
TOTAL_ASSETS	The summed total assets of clients per auditor is the yearly summed total assets of clients per auditor per audit firm.
NUM_NEW	The number of new clients per auditor is the yearly number of new clients per auditor per audit firm.
NEW_TOTAL_ASSETS	The summed total assets of new clients per auditor is the yearly summed total assets of clients per auditor per audit firm.
LOG_X	The natural logarithm of variable X.
ABS_AB_ACC	Absolute abnormal accruals, estimated using the modified Jones model (Dechow et al., 1995; Jones, 1991): $\frac{TA_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta Rev_{i,t} - \Delta Rec_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$, where $TA_{i,t} = \Delta CA_{i,t} - \Delta Cash_{i,t} - \Delta CL_{i,t} + \Delta STD_{i,t} - Dep_{i,t}$, A is the client's total assets, ΔRev is the change in revenues, ΔRec is the change in receivables, ΔPPE is the change in property, plant and equipment, ΔCA is the change in current assets, $\Delta Cach$ is the change in cash and cash equivalents, ΔCL is the change in current liabilities, ΔSTD is the change in debt including in current liabilities or short-term debt. *ABS_AB_ACC* is the residual value of the estimation model. The model is estimated separately for each industry and calendar year using data available on all firms that are supposed to have auditors from *Bel-first*. The higher the *ABS_AB_ACC*, the lower the audit quality.
GENDER	Dummy variable, equal to 1 for female auditors and zero otherwise.
Control variables	
Portfolio-level controls	
BIG4	Dummy variable, equal to 1 for the auditor who works in Big 4, zero otherwise.
EXPERIENCE	The year between the auditor's registration year (reported in Instituut van de Bedrijfsrevisoren) and the observation year.
EXPERIENCE_LOG	The logged value of (*EXPERIENCE* + 1).
SIZE_MEDIAN	The median value of the client's logged total assets for each auditor portfolio.
RISK_NEG_EQU	Risk score, measured by the proportion of the negative equity in the auditor portfolio in terms of the number of clients.
RISK_ZSCORE	Risk score, measured by the proportion of clients with bankruptcy risk in the auditor portfolio in terms of the number of clients.
IND_CON	Dummy variable, equal to 1 if the portfolio's Herfindahl-Hirschman Index (HHI) is higher than the median HHI of the firm, zero otherwise.
ROA_MEDIAN	The median value of the client's return on assets (net income scaled by total assets) for each auditor portfolio.
AUTO_MEDIAN	The median value of the client's auto ratio (retained earnings scaled by total assets) for each auditor portfolio.
CASH_MEDIAN	The median value of the client's cash and cash equivalent for each auditor portfolio. Cash and cash equivalents is scaled by total assets.
OCF_MEDIAN	The median value of the client's operating cash flow for each auditor portfolio. Operating cash flow is scaled by total assets.
PRO_PUB	The logged number of public clients in each auditor's portfolio.

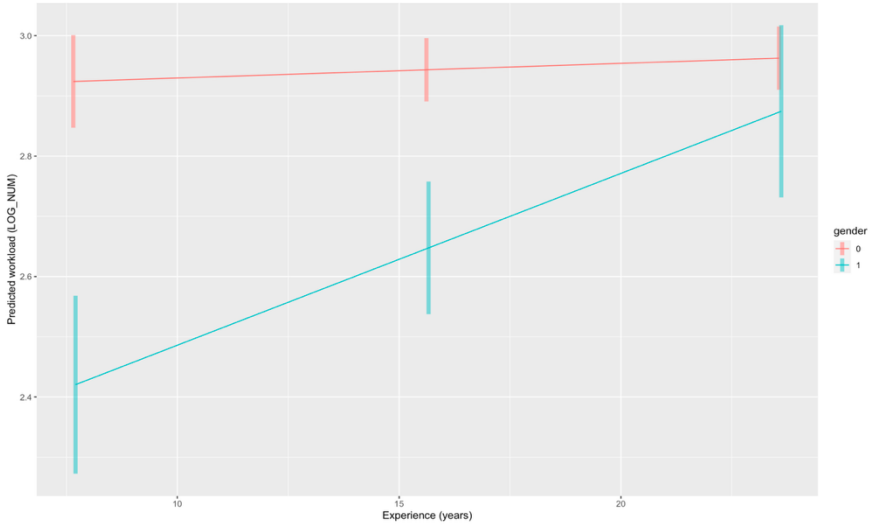
X_LAG	The lagged value of variable *X*.
Client-level controls	
SIZE	Natural logarithm of the client's total assets.
BIG4	Dummy variable, equal to 1 if the client is audited by Big 4, zero otherwise.
ROA	Client net income divided by its total assets.
OCF	Client operating cash flow, measured by subtracting the total accruals from the income before extraordinary items before taxes. *OCF* is scaled by total assets.
CASH	Client cash and cash equivalents. *Cash* is scaled by total assets.
ZSCORE	Altman Z-score.
LEV	Client leverage, measured by dividing total liabilities by its total assets.
SPE_FIRM	Dummy variable, equal to 1 if the client is audited by an audit firm who is the specialist, zero otherwise. *SPE_FIRM* is measured by the market share of the audit firm in a certain industry.
SPE_AUDITOR	Dummy variable, equal to 1 if the client is audited by the auditor who is the specialist, and zero otherwise. *SPE_AUDITOR* is measured by the market share of the auditor in a certain industry within the audit firm. It represents the auditor-level auditor industry expertise within the auditor' office.
PUB	Dummy variable, equal to 1 if the client is a public firm.
NEG_INCOME	Dummy variable, equal to 1 if the client has negative income in year *t-1*.

Table 2: Sample selection

Panel A: Auditor workload initial sample	
Number of engagement auditors retrieved from Bel-first for the years 2013-2020	891
Less: number of single practitioners	(230)
Number of auditors	661
Less: auditors whose clients have missing total assets data	(4)
Less: auditors for which we do not have information on their experience	(55)
Number of auditors for *H1a*	602
Number of auditor-year-firm observations for *H1a*	3,852
Less: Number of auditor-year-firm observations due to lagged variables	(655)
Number of auditor-year-firm observations for *H1b*	3,197
Panel B: Sample used to calculate abnormal accruals	
Initial observations available for abnormal accruals calculation	269, 235
Less: observations with missing data to calculate abnormal accruals	(82,345)
Less: observations where there are less than six observations for a combination of year and industry code and observations without industry code	(326)
Number of client-year observations abnormal accruals model*	186,564
Panel C: Client sample	
Number of client-year observations for the 661 engagement auditors*	164,987
Less: observations with missing total assets data	(10,571)
Less: observations without auditor tenure information	(1,781)
Less: observations with missing audit fees information	(34,432)
Less: observations with industry financing and insurance activities (industry code K in NACEBEL.2008)	(10,987)
Less: repeated observations	(3)
Number of client-year observations for final sample (*H2*)	107,213

Note: * the number of client-year observations abnormal accruals model is greater than the number of client-year observations for the 661 engagement auditors. The reason is that some clients do not have auditor information in a certain year, but we include this observation in the abnormal accruals model to get a better estimation.

Figure 1: Visualization of the interaction effect between *GENDER* and *EXPERIENCE* on *LOG_NUM* and *LOG_TOTAL ASSETS (Big4 Sample)*



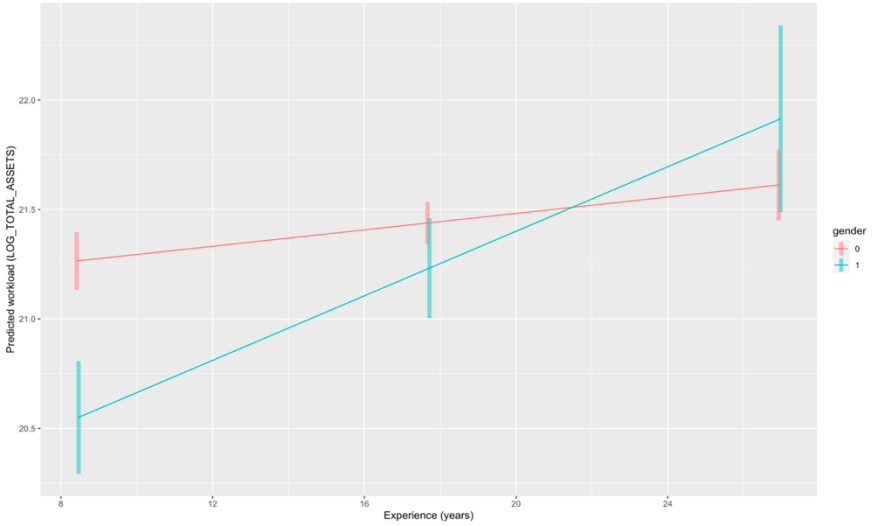
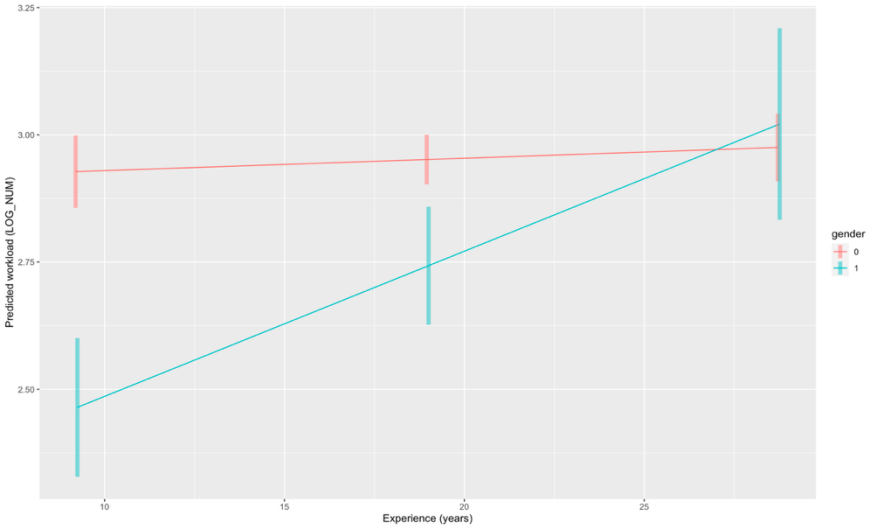


Figure 3: Visualization of the interaction effect between *GENDER* and *EXPERIENCE* on *LOG_NUM* and *LOG_TOTAL ASSETS (Non-Big4 Sample)*



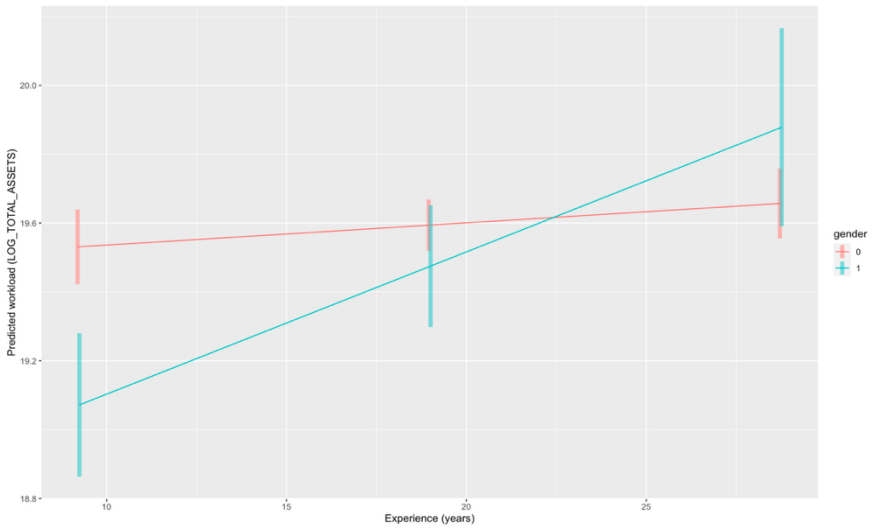


Table 3: Descriptive statistics

Panel A: Descriptive statistics on partner portfolio characteristics										
			Female partners(n = 112)			**Male partners (n = 490)**			**t-tests**	
	n	**mean**	**mean**	**median**	**sd**	**mean**	**median**	**sd**	**t-stat**	**p-value**
NUMBER	3,852	40.300	32.003	21.000	35.455	42.097	31.000	42.185	6.464***	0.000
TOTAL_ASSETS	3,852	2,233,130,896.000	1,639,636,267.146	757,015,100.000	2,151,687,315.443	2,357,871,049.115	801,733,087.000	3,410,634,001.880	6.984***	0.000
EXPERIENCE	3,852	17.700	15.063	14.000	8.394	18.245	18.000	9.331	8.737***	0.000
SIZE_MEDIAN	3,852	18,586,086.000	24,181,009.586	8,128,721.000	108,040,834.368	17,410,150.545	7,959,199.000	67,730,601.738	-1.558	0.120
RISK_NEG_EQU	3,852	0.085	0.089	0.064	0.125	0.085	0.059	0.383	-0.535	0.593
RISK_ZSCORE	3,852	0.344	0.311	0.300	0.199	0.350	0.333	0.849	2.331**	0.020
IND_CON	3,852	0.497	0.547	1.000	0.498	0.486	0.000	0.500	-2.866***	0.004
ROA_MEDIAN	3,852	0.021	0.022	0.018	0.055	0.021	0.018	0.053	-0.330	0.742
AUTO_MEDIAN	3,852	0.096	0.104	0.134	0.868	0.095	0.137	1.086	-0.239	0.811
CASH_MEDIAN	3,852	0.110	0.124	0.076	0.141	0.107	0.070	0.122	-2.894***	0.004
OCF_MEDIAN	3,852	0.059	0.059	0.053	0.092	0.060	0.054	0.085	0.254	0.800
PRO_PUB	3,852	0.007	0.009	0.000	0.062	0.006	0.000	0.032	-1.223	0.222
			Female partners(n = 106)			**Male partners (n = 473)**				
NUM_NEW	3,197	9.590	8.400	5.000	10.200	9.830	6.000	14.000	2.800***	0.005
TOTAL_ASSETS_NEW	3,197	41,979,612,980.000	26,115,029,335.400	3,675,080,872.000	54,404,565,250.700	45,283,235,651.670	5,571,023,362.000	138,652,089,933.000	5.390***	0.000
Panel B: Descriptive statistics on client characteristics										
			Female partners(n = 112)			**Male partners (n = 490)**			**t-tests**	
	n	**mean**	**mean**	**median**	**sd**	**mean**	**median**	**sd**	**t-stat**	**p-value**
ABS_AB_ACC	107,213	0.144	0.145	0.075	0.203	0.144	0.074	0.204	-0.322	0.747
SIZE	107,213	16.100	16.200	15.200	1.850	16.100	16.100	1.850	16.123***	0.000
ROA	107,213	0.018	0.015	0.022	0.180	0.019	0.022	0.172	2.012**	0.044
OCF	107,213	0.080	0.081	0.061	0.268	0.079	0.061	0.269	-0.651	0.515
CASH	107,213	0.148	0.149	0.057	0.212	0.148	0.054	0.214	-0.406	0.684
ZSCORE	107,213	12.400	13.600	2.440	105.600	12.200	2.420	99.100	-1.510	0.131
LEV	107,213	0.719	0.749	0.621	1.220	0.714	0.625	1.030	-3.279***	0.001
SPE_FIRM	107,213	0.014	0.018	0.000	0.131	0.014	0.000	0.131	3.144***	0.002
SPE_AUDITOR	107,213	0.271	0.243	0.000	0.429	0.276	0.000	0.447	8.478***	0.000
PUB	107,213	0.006	0.007	0.000	0.083	0.006	0.000	0.075	1.712*	0.087
NEG_INCOME	107,212	0.264	0.266	0.000	0.442	0.264	0.000	0.441	-0.638	0.523

Note: ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.

Table 4: Spearman correlation matrices

Panel A: Spearman correlation matrix at portfolio level

Variables	LOG_NUMBER	LOG_TOTAL_ASSETS	GENDER	EXPERIENCE	SIZE_MEDIAN	RISK_NEG_EQU	RISK_ZSCORE	IND_CON	ROA_MEDIAN	AUTO_MEDIAN	CASH_MEDIAN	OCF_MEDIAN	PRO_PUB
LOG_NUMBER	1.000												
LOG_TOTAL_ASSETS	**0.816**	1.000											
GENDER	**-0.099**	**-0.055**	1.000										
EXPERIENCE	**-0.050**	**-0.083**	**-0.127**	1.000									
SIZE_MEDIAN	**-0.201**	**0.071**	**0.060**	-0.011	1.000								
RISK_NEG_EQU	-0.025	-0.024	-0.002	0.018	-0.019	1.000							
RISK_ZSCORE	**-0.033**	-0.006	-0.019	0.016	0.026	**0.964**	1.000						
IND_CON	**-0.352**	**-0.182**	**0.036**	**0.047**	**0.097**	-0.011	0.005	1.000					
ROA_MEDIAN	**-0.058**	**-0.037**	-0.007	-0.027	0.028	**-0.040**	**-0.057**	-0.020	1.000				
AUTO_MEDIAN	**0.036**	**0.085**	0.016	-0.033	0.013	**-0.070**	-0.029	**-0.054**	**0.219**	1.000			
CASH_MEDIAN	**-0.361**	**-0.359**	**0.037**	**0.046**	**0.039**	0.000	-0.013	**0.170**	**0.053**	**-0.241**	1.000		
OCF_MEDIAN	**-0.060**	**-0.070**	-0.001	**-0.039**	-0.005	**-0.041**	**-0.040**	-0.013	**0.070**	0.002	**0.165**	1.000	
PRO_PUB	**-0.069**	**0.089**	**0.038**	-0.004	**0.499**	**0.421**	**0.451**	0.022	0.033	0.001	-0.030	-0.015	1.000

Panel B: Spearman correlation matrix at client level

Variables	ABS_AB_ACC	GENDER	LOG_NUMBER	LOG_TOTAL_ASSETS	EXPERIENCE	SIZE	ROA	OCF	CASH	ZSCORE	LEV	SPE_FIRM	SPE_AUDITOR	PUB	NEG_INCOME	BIG4
ABS_AB_ACC	1.000															
GENDER	**0.001**	1.000														
LOG_NUMBER	**0.050**	**-0.087**	1.000													
LOG_TOTAL_ASSETS	**0.056**	**-0.059**	**0.736**	1.000												
EXPERIENCE	**-0.027**	**-0.077**	**0.047**	**-0.016**	1.000											
SIZE	**-0.220**	**0.001**	**-0.029**	**0.125**	0.001	1.000										
ROA	**-0.182**	**-0.006**	**-0.009**	**-0.019**	**-0.007**	**0.169**	1.000									
OCF	**0.011**	0.002	0.003	**-0.007**	-0.002	**-0.017**	**0.188**	1.000								
CASH	**0.074**	0.001	**-0.060**	**-0.027**	**0.008**	**-0.180**	0.002	**0.130**	1.000							
ZSCORE	**-0.026**	0.005	**-0.011**	**0.023**	-0.001	-0.033	**0.016**	**-0.036**	**0.025**	1.000						
LEV	**0.313**	**0.011**	**0.023**	**0.013**	0.005	**-0.279**	**-0.455**	**0.017**	**0.062**	**-0.096**	1.000					
SPE_FIRM	**0.021**	**0.010**	**0.051**	**0.083**	**-0.019**	**0.023**	-0.005	0.000	0.002	**-0.006**	0.001	1.000				
SPE_AUDITOR	**-0.054**	**-0.025**	**-0.040**	**-0.264**	**0.136**	**-0.043**	**0.019**	0.000	0.000	**-0.019**	**-0.021**	**-0.066**	1.000			
PUB	**-0.006**	0.006	-0.003	**0.033**	0.002	**0.114**	**-0.021**	**-0.016**	**-0.006**	**-0.009**	**-0.008**	**0.006**	**-0.023**	1.000		
NEG_INCOME	**0.146**	0.002	**0.027**	**0.038**	0.000	**-0.161**	**-0.323**	**-0.146**	**-0.028**	**0.017**	**0.210**	**0.006**	**-0.036**	**0.014**	1.000	
BIG4	**0.073**	**0.051**	**0.291**	**0.602**	**-0.178**	**0.085**	**-0.019**	-0.001	**0.007**	**0.027**	**0.026**	**0.098**	**-0.591**	**0.018**	**0.046**	1.000

Table 5: Auditor workload regression analyses (H1a)

Table 5 presents the regression results of auditor workload, a variable proxied by the number of clients and by the summed total assets of clients per year per auditor. All other variables are defined in detail in Table 1: Variable Definitions.

	LOG_NUM						LOG_TOTAL_ASSETS					
	FULL SAMPLE		BIG4		Non-BIG4		FULL SAMPLE		BIG4		Non-BIG4	
	Column 1		Column 2		Column 3		Column 4		Column 5		Column 6	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	5.490***	0.000	7.479***	0.000	4.552***	0.000	18.713***	0.000	20.202***	0.000	18.800***	0.000
GENDER	-0.232***	0.000	-0.200**	0.004	-0.249***	0.000	-0.268***	0.000	-0.367***	0.001	-0.172*	0.067
BIG4	0.571***	0.000					1.718***	0.000				
EXPERIENCE_LOG	0.313***	0.000	0.471***	0.000	0.222***	0.000	0.475***	0.000	0.658***	0.000	0.353***	0.000
ROA_MEDIAN	-0.656*	0.052	-0.835	0.181	-0.701	0.111	-1.155**	0.028	-2.171**	0.030	-0.637	0.343
AUTO_MEDIAN	0.027	0.127	0.087**	0.004	-0.006	0.795	0.123***	0.000	0.224***	0.000	0.089**	0.012
CASH_MEDIAN	-2.899***	0.000	-2.409***	0.000	-3.060***	0.000	-4.579***	0.000	-4.292***	0.000	-4.789***	0.000
OCF_MEDIAN	-0.389*	0.061	-1.826***	0.000	0.282	0.267	-0.722**	0.026	-3.231***	0.000	0.717*	0.065
SIZE_MEDIAN	-0.170***	0.000	-0.278***	0.000	-0.101***	0.001						
RISK_NEG_EQU	-0.130	0.438	-0.992***	0.001	0.427*	0.075	-1.403***	0.000	-2.449***	0.000	-0.579	0.107
RISK_ZSCORE	0.020	0.793	0.421***	0.002	0.015	0.905	0.500***	0.000	0.950***	0.000	0.469**	0.012
IND_CON	-0.785***	0.000	-0.916***	0.000	-0.731***	0.000						
PRO_PUB	-1.314**	0.011	-2.524**	0.003	-0.923	0.149	3.229***	0.000	3.325**	0.013	2.566***	0.007
n	3,852		1,480		2,372		3,852		1,480		2,372	
Year fixed effect	YES		YES		YES		YES		YES		YES	
R^2	0.296		0.355		0.246		0.321		0.246		0.162	
R^2 adjusted	0.293		0.347		0.240		0.318		0.237		0.156	

Note: 1. ***, **, * donate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6: New client allocation analysis (H1b)

Table 6 presents the regression results of the number of new clients assigned to each auditor; a variable proxied by the number of clients and by the summed total assets of clients per year per auditor. All other variables are defined in detail in Table 1: Variable Definitions.

	LOG_NUM_NEW						LOG_TOTAL_ASSETS_NEW					
	FULL SAMPLE		BIG4		Non-BIG4		FULL SAMPLE		BIG4		Non-BIG4	
	Column 1		Column 2		Column 3		Column 4		Column 5		Column 6	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	5.067***	0.000	7.805***	0.000	2.780***	0.000	25.891***	0.000	27.021***	0.000	25.721***	0.000
GENDER	-0.162***	0.000	-0.166**	0.019	-0.169**	0.004	-1.287***	0.000	-1.218***	0.007	-1.379***	0.004
BIG4	0.520***	0.000					3.195***	0.000				
EXPERIENCE_LOG_LAG	-0.316***	0.000	-0.266***	0.000	-0.341***	0.000	-1.555***	0.000	-0.872***	0.006	-1.860***	0.000
ROA_MEDIAN_LAG	0.012	0.975	-0.033	0.958	-0.186	0.705	-0.672	0.813	1.193	0.769	-0.462	0.907
AUTO_MEDIAN_LAG	-0.013	0.527	0.009	0.742	-0.034	0.283	-0.125	0.406	-0.14	0.444	-0.047	0.851
CASH_MEDIAN_LAG	-1.811***	0.000	-1.701***	0.000	-1.705***	0.000	-13.718***	0.000	-13.097***	0.000	-14.329***	0.000
OCF_MEDIAN_LAG	-0.385	0.104	-0.379	0.359	-0.487*	0.097	-4.178**	0.018	0.481	0.856	-5.445**	0.022
SIZE_MEDIAN_LAG	-0.121***	0.000	-0.262***	0.000	0.022	0.467						
RISK_NEG_EQU_LAG	0.173	0.324	-0.086	0.789	0.626**	0.013	1.356	0.290	0.864	0.662	5.563***	0.005
RISK_ZSCORE_LAG	-0.071	0.377	0.040	0.787	0.123	0.319	-0.139	0.813	-0.117	0.898	2.226**	0.026
IND_CON_LAG	-0.335***	0.000	-0.401***	0.000	-0.319***	0.000						
PRO_PUB_LAG	-0.901*	0.072	-1.133	0.248	-1.089*	0.060	-13.803***	0.000	-9.726	0.111	-15.309***	0.001
n	3,197		1,235		1,962		3,197		1,235		1,962	
Year fixed effect	YES		YES		YES		YES		YES		YES	
R^2	0.207		0.200		0.152		0.143		0.082		0.106	
R^2 adjusted	0.203		0.189		0.144		0.139		0.071		0.100	

Note: 1. ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.

Table 7: Audit quality regression analyses (H2)

Table 7 presents the regression results of audit quality, a variable proxied by the adjusted Jones model of the abnormal discretionary accruals. All other variables are defined in detail in Table 1: Variable Definitions.

Dep: ABS_AB_ACC	**Full Sample**				**BIG4**				**Non-BIG4**			
	Column 1		**Column 2**		**Column 3**		**Column 4**		**Column 5**		**Column 6**	
	Coeff.	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
INTERCEPT	0.307***	0.000	0.208***	0.000	0.322***	0.000	0.193***	0.000	0.325***	0.000	0.239***	0.000
LOG_NUM	0.006***	0.000			0.006***	0.000			0.006***	0.000		
LOG_TOTAL_ASSETS			0.006***	0.000			0.008***	0.000			0.006***	0.000
EXPERIENCE_LOG	-0.006***	0.000	-0.007***	0.000	-0.011***	0.000	-0.012***	0.000	-0.002	0.140	-0.003*	0.050
SIZE	-0.014***	0.000	-0.015***	0.000	-0.013***	0.000	-0.014***	0.000	-0.017***	0.000	-0.017***	0.000
BIG4	0.020***	0.000	0.013***	0.000								
ROA	-0.035***	0.000	-0.034***	0.000	-0.047***	0.000	-0.047***	0.000	-0.014**	0.015	-0.013**	0.022
OCF	0.011***	0.000	0.011***	0.000	0.025***	0.000	0.025***	0.000	-0.014***	0.000	-0.014***	0.000
CASH	0.035***	0.000	0.034***	0.000	0.034***	0.000	0.033***	0.000	0.038***	0.000	0.037***	0.000
ZSCORE	-0.000**	0.014	-0.00002**	0.007	-0.00002***	0.002	-0.00003***	0.001	0.00001	0.511	0.00000	0.600
LEV	0.046***	0.000	0.046***	0.000	0.044***	0.000	0.044***	0.000	0.051***	0.000	0.051***	0.000
SPE_FIRM	0.023***	0.000	0.022***	0.000	0.025***	0.000	0.024***	0.000	-0.021	0.227	-0.022	0.194
SPE_AUDITOR	-0.006***	0.000	-0.007***	0.000	-0.009	0.112	-0.010	0.085	-0.006***	0.000	-0.006***	0.000
PUB	0.024***	0.002	0.022**	0.004	0.001	0.927	-0.001	0.919	0.065***	0.000	0.064***	0.000
NEG_INCOME	0.028***	0.000	0.028***	0.000	0.029***	0.000	0.029***	0.000	0.027***	0.000	0.026***	0.000
n	107,213		107,213		57,013		57,013		50,200		50,200	
Year fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
Industry fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
R^2	0.133		0.134		0.129		0.129		0.132		0.133	
R^2 adjusted	0.133		0.134		0.128		0.129		0.132		0.132	

Note:

1. ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.

Table 8: Additional regression analyses (gender and workload effects on audit quality) (RQ)

Table 8 presents the regression results of audit quality, a variable proxied by the adjusted Jones model of the abnormal discretionary accruals. All other variables are defined in detail in Table 1: Variable Definitions.

Dependent variable: ABS_AB_ACC	**Full Sample**						**BIG4**						**Non-BIG4**					
	Column 1		**Column 2**		**Column 3**		**Column 4**		**Column 5**		**Column 6**		**Column 7**		**Column 8**		**Column 9**	
	Coeff.	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
INTERCEPT	0.328***	0.000	0.307***	0.000	0.209***	0.000	0.349***	0.000	0.324***	0.000	0.198***	0.000	0.344***	0.000	0.325***	0.000	0.239***	0.000
LOG_NUM			0.006***	0.000					0.006***	0.000					0.006***	0.000		
LOG_TOTAL_ASSETS					0.006***	0.000					0.007***	0.000					0.006***	0.000
GENDER	-0.003*	0.070	-0.002	0.298	-0.001	0.549	-0.006**	0.013	-0.005*	0.055	-0.003	0.265	0.001	0.612	0.002	0.293	0.002	0.398
EXPERIENCE_LOG	-0.005***	0.000	-0.006***	0.000	-0.007***	0.000	-0.009***	0.000	-0.011***	0.000	-0.012***	0.000	-0.001	0.506	-0.002	0.162	-0.003*	0.058
SIZE	-0.015***	0.000	-0.014***	0.000	-0.015***	0.000	-0.014***	0.000	-0.013***	0.000	-0.014***	0.000	-0.017***	0.000	-0.017***	0.000	-0.017***	0.000
BIG4	0.024***	0.000	0.020***	0.000	0.013***	0.000												
ROA	-0.035***	0.000	-0.035***	0.000	-0.034***	0.000	-0.047***	0.000	-0.047***	0.000	-0.047***	0.000	-0.014**	0.018	-0.014**	0.015	-0.013**	0.022
OCF	0.011***	0.000	0.011***	0.000	0.011***	0.000	0.026***	0.000	0.025***	0.000	0.025***	0.000	-0.014***	0.000	-0.014***	0.000	-0.014***	0.000
CASH	0.033***	0.000	0.035***	0.000	0.034***	0.000	0.032***	0.000	0.034***	0.000	0.033***	0.000	0.037***	0.000	0.038***	0.000	0.037***	0.000
ZSCORE	-0.00002**	0.009	-0.00001**	0.014	-0.0***	0.007	-0.0***	0.001	-0.000***	0.002	-0.00003***	0.001	0.000	0.566	0.00001	0.515	0.000	0.604
LEV	0.046***	0.000	0.046***	0.000	0.046***	0.000	0.044***	0.000	0.044***	0.000	0.044***	0.000	0.051***	0.000	0.051***	0.000	0.051***	0.000
SPE_FIRM	0.024***	0.000	0.023***	0.000	0.022***	0.000	0.026***	0.000	0.025***	0.000	0.024***	0.000	-0.021	0.224	-0.021	0.228	-0.022	0.195
SPE_AUDITOR	-0.004**	0.012	-0.006***	0.000	-0.007***	0.000	-0.008	0.152	-0.008	0.140	-0.009*	0.099	-0.003**	0.035	-0.006***	0.000	-0.006***	0.000
PUB	0.024***	0.002	0.024***	0.002	0.022***	0.004	0.001	0.944	0.001	0.923	-0.001	0.925	0.066***	0.000	0.065***	0.000	0.064***	0.000
NEG_INCOME	0.028***	0.000	0.028***	0.000	0.028***	0.000	0.029***	0.000	0.029***	0.000	0.029***	0.000	0.027***	0.000	0.027***	0.000	0.026***	0.000
n	107,213		107,213		107,213		57,013		57,013		57,013		50,200		50,200		50,200	
Year fixed effect	YES		YES		YES		YES		YES		YES		YES		YES		YES	
Industry fixed effect	YES		YES		YES		YES		YES		YES		YES		YES		YES	
R^2	0.133		0.133		0.134		0.128		0.129		0.129		0.131		0.132		0.133	
R^2 adjusted	0.133		0.133		0.134		0.128		0.128		0.129		0.131		0.132		0.132	

Note:

1. ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.

Table 9: The effect of auditor's experience across auditor's gender (LOG_NUM)

Panel A: Regressions analysis

Depdent variable: LOG_NUM	Full Sample		BIG4		Non-BIG4	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	6.155***	0.000	8.593***	0.000	4.974***	0.000
GENDER	-0.775***	0.000	-0.962***	0.000	-0.704***	0.000
GENDER*EXPERIENCE	0.033***	0.000	0.053***	0.000	0.026***	0.000
EXPERIENCE	0.006***	0.005	0.015***	0.000	0.002	0.339
BIG4	0.542***	0.000				
SIZE_MEDIAN	-0.162***	0.000	-0.281***	0.000	-0.090***	0.002
RISK_NEG_EQU	-0.084	0.353	-0.908***	0.003	0.437*	0.070
RISK_ZSCORE	-0.003	0.731	0.373***	0.007	-0.0.002	1.000
IND_CON	-0.799***	0.000	-0.933***	0.000	-0.472***	0.000
ROA_MEDIAN	-0.715**	0.036	-1.167*	0.065	-0.712*	0.107
AUTO_MEDIAN	0.025	0.156	0.103***	0.000	-0.013**	0.586
CASH_MEDIAN	-2.950***	0.000	-2.534***	0.000	-3.067	0.000
OCF_MEDIAN	-0.428**	0.041	-1.864***	0.000	-0.245***	0.338
PRO_PUB	-1.073**	0.039	-1.901**	0.031	-0.809	0.208
n	3,852		1,480		2,372	
Year fixed effect	YES		YES		YES	
R^2	0.285		0.336		0.240	
R^2 adjusted	0.281		0.327		0.234	

Panel B: Estimated marginal means

	Estimated workload (logged value)					
	Full Sample		BIG4		Non-BIG4	
EXPERIENCE	Male partners	Female partners	Male partners	Female partners	Male partners	Female partners
One standard deviation below	3.144	2.651	3.311	2.753	2.928	2.464
At the mean	3.199	3.015	3.432	3.292	2.951	2.743
One standard deviation above	3.254	3.380	3.552	3.831	2.975	3.021

Panel C: Simple slope analysis

	Full Sample		BIG4		Non-BIG4	
GENDER	Experience.trend		Experience.trend		Experience.trend	
Male	0.006		0.015		0.002	
Female	0.039		0.068		0.029	
Contrast	estimate	p-value	estimate	p-value	estimate	p-value
Female - Male	0.033	<0.001	0.053	<0.001	0.026	<0.001
Confidence level used: 0.95						

Note: 1. ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.

Table 10: The effect of auditor's experience across auditor's gender (LOG_TOTAL_ASSETS)

Panel A: Regressions analysis

Depdent variable:	Full Sample		BIG4		Non-BIG4	
LOG_TOTAL_ASSETS	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	19.892***	0.000	21.711***	0.000	19.694***	0.000
GENDER	-0.988***	0.000	-1.178***	0.000	-0.780***	0.000
GENDER*EXPERIENCE	0.044***	0.000	0.055***	0.001	0.035***	0.001
EXPERIENCE	0.010***	0.003	0.019***	0.002	0.006*	0.096
BIG4	1.681***	0.000				
RISK_NEG_EQU	-1.345***	0.000	-2.343***	0.000	-0.585	0.106
RISK_ZSCORE	0.469***	0.000	0.890***	0.000	0.445**	0.018
ROA_MEDIAN	-1.262**	0.018	-2.730***	0.007	-0.654	0.333
AUTO_MEDIAN	0.123***	0.000	0.249***	0.000	0.081**	0.022
CASH_MEDIAN	-4.68***	0.000	-4.454***	0.000	-4.837***	0.000
OCF_MEDIAN	-0.793**	0.015	-3.341***	0.000	0.668*	0.088
PRO_PUB	3.612***	0.000	4.117***	0.003	2.777***	0.004
n	3,852		1,480		2,372	
Year fixed effect	YES		YES		YES	
R^2	0.308		0.218		0.154	
R^2 adjusted	0.304		0.209		0.147	

Panel B: Estimated marginal means

	Estimated workload (logged value)					
	Full Sample		BIG4		Non-BIG4	
EXPERIENCE	**Male partners**	**Female partners**	**Male partners**	**Female partners**	**Male partners**	**Female partners**
One standard deviation below	20.393	19.775	21.250	20.494	19.531	19.072
At the mean	20.484	20.273	21.400	21.082	19.594	19.475
One standard deviation above	20.575	20.770	21.667	21.667	19.657	19.979

Panel C: Simple slope analysis

	Full Sample		BIG4		Non-BIG4	
GENDER	**Experience.trend**		**Experience.trend**		**Experience.trend**	
Male	0.010		0.019		0.007	
Female	0.054		0.074		0.041	
Contrast	**estimate**	**p-value**	**estimate**	**p-value**	**estimate**	**p-value**
Female - Male	0.044	<0.001	0.055	0.001	0.035	0.001
Confidence level used: 0.95						

Note: 1. ***, **, * donate statistical significiance at the 1%, 5%, and 10% level, respectively.