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Do Social Ties Between Two Signatory Auditors Affect Audit Quality and Firm Value?

Xinxian Chen <yc07023@connect.um.edu.mo>

Faculty of Business Administration, University of Macau

Jean Jinghan Chen < j.chen-2268@kent.ac.uk >

Kent Business School, University of Kent

Jason Zezhong Xiao <jasonxiao@um.edu.mo>

Faculty of Business Administration, University of Macau

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Do Social Ties Between Two Signatory Auditors Affect Audit Quality and Firm Value?

Abstract

We explore the effects of social ties (including alumni relations, regional connections and employment affiliation) between the two signatory auditors (engagement and review auditors) on audit quality in China. We find that client firms with socially connected signatory auditors have lower audit quality, suggesting that social ties trigger collusive alliances between auditors. The negative effect is more pronounced when the two signatory auditors are partners of their audit firms or when financial irregularities exist in their client firms. Conversely, this adverse effect is alleviated if the two signatory auditors have attended elite schools or work for one of the Big 4 audit firms, given their rich human capital and quality audit service. We further find that social ties between the two auditors significantly decrease firm value through impaired market confidence, while this negative relationship can be partially explained by impaired audit quality. Our results are robust when controlling for endogeneity and using alternative measures of audit quality and firm value. Overall, our results indicate that the costs of the two signatory auditors' social ties outweigh their benefits.

Keywords: signatory auditors; audit team; social ties; audit quality; firm value

JEL: M4; M42; G32

1. Introduction

The audit report is a document containing the auditor's opinion on whether a company's financial statements comply with accounting standards and are free from material misstatements. Counter to practices adopted in most Western countries, Chinese regulatory authorities require that audit reports be signed by two auditors (the engagement auditor and the review auditor). These professionals are the most prominent audit team members, as they personally bear the legal liabilities of the entire engagement team and carry the ultimate responsibility for audit quality management (MOF, 2001, No. 1035). In practice, they play different roles in the audit team, whereby the engagement auditor is responsible for conducting auditing and generating revenue from clients, while the review auditor focuses on ensuring high audit quality to minimise the risk of reputation impairment and litigation. Thus, as these auditors may have different incentives, and their performance is evaluated against different metrics (Lennox et al., 2020), conflicts and clashes may arise. To prevent any conflicts that may result in adverse outcomes, they need to cooperate and negotiate to achieve a common objective while fulfilling their respective roles. Recently, the personal characteristics of the two signatory auditors have attracted scholars' attention (Francis, 2023). The findings indicate that different characteristics of the two auditors could influence their cooperation and negotiation and, therefore, audit quality (Chen et al., 2020; Downar et al., 2021a; Lennox et al., 2020). Consequently, it is important to understand what factors affect their cooperation and negotiation, which may ultimately influence audit outcomes.

Social ties—defined as "connections among people that are used for sharing information, knowledge, feelings, experiences and resources" (Seraj & Toker, 2011, p. 84)—between the two auditors are likely to affect their working relationship and role fulfilment, as well as the performance of the entire team. The majority of extant studies on social ties in the auditing context have been conducted in cross-organisational settings, such as social

relationships between auditors and client firms (Guan et al., 2016; He et al., 2017; Kachelmeier et al., 2017; Kwon & Yi, 2018) and between auditors and financial institutions (Chen et al., 2021; He et al., 2019). There is a paucity of research on social ties in an audit team setting (especially that involving the two signing auditors). This is a gap in the literature that needs to be filled, since social ties between the two signatory auditors are different from social ties between organisations (such as those between auditors and client firm executives). The two signing auditors are required to interact frequently in a small team, thereby enhancing the intimacy and familiarity between them. Our study aims to fill this gap.

We examine the effect of social ties between the two signatory auditors on audit quality. Social ties are typically formed based on an individual's social identity, thus distinguishing members of particular groups from those outside their boundaries. According to social identity theory, in-group membership is based on social categorisation, identification, and comparison, which results in in-group favouritism and out-group discrimination (Uzzi, 1996). In the context of auditing, it is unclear whether social ties between the two signatory auditors affect audit quality, as they may either collaborate or collude while performing their distinct tasks and roles. On the one hand, strong social ties facilitate the transfer of information and the coordination of their respective roles (McPherson et al., 2001), as well as the exchange of private and sensitive information (Granovetter, 1973) and supportive resources (Burt, 2000; Connelly et al., 2011), resulting in higher audit quality. As social ties also encourage advice-seeking behaviour (Clark & Mils, 1982; Krackhardt & Stern, 1988), socially connected auditors are expected to have a better understanding of auditing issues and collaborate on resolving complex or sensitive tasks that require sophisticated professional judgement. As a result, they could more effectively fulfil their respective roles in discovering and reporting accounting manipulation and irregularities.

On the other hand, if the two auditors have strong social ties, this close relationship could also compromise their ability to monitor each other's performance (e.g., by reducing the number of analytical audit procedures, substantive tests (Du, 2019) and aggressive accounting verification (Eli et al., 2019), resulting in lower auditing quality (Khanna et al., 2015). Moreover, the two signatory auditors usually have an unequal status in their audit firm (such as different partnership levels) or have different levels of knowledge and experience, and the inferior party may exhibit blind obedience, thus impairing professionalism and checks and balances (Brown & Warner, 1985).

Whether the two signatory auditors' social ties affect firm valuation through audit quality is another underexplored issue. We argue that if the two auditors' social ties motivate them to engage in cooperation or collusion, such opposite alliances influence investors' perceptions of audit effectiveness and market confidence, thereby influencing firm valuation (*ex ante* assessment). Moreover, we also argue that signatory auditors' social ties could indirectly influence firm valuation via audit quality. A higher (lower) quality of audit (*ex post* occurrence) alleviates (exacerbates) information asymmetry and agency problems perceived by investors, which eventually translate into a higher (lower) firm value, in line with extant evidence (DeFond & Zhang, 2014; Fan & Wong, 2015; Guedhami et al., 2014).

We test the effect of social ties between the two signing auditors on audit quality, then, firm value in the Chinese context because China is widely recognised as a more relationship-based than rule-based economy (Liu et al., 2011). This specific setting also provides rare data on auditing practices, auditors' behaviour and characteristics. Using a sample of Chinese listed companies spanning the period of 2004 to 2018, we test our research questions. We utilise discretionary accruals and the propensity to issue clean audit opinions as measures of audit quality. As social ties are usually formed and built through common personal experience

(Jacobs, 1979, 1982), we consider alumni connections, regional bonding and employment affiliation as indicative of the strength of social ties between the two signatory auditors.

We find that the two signatory auditors' social ties adversely affect audit quality, in addition to the negative influence of auditor−client social ties on audit quality documented in the literature (Guan et al., 2016; He et al., 2017). The magnitude of the relationship depends on both auditor and audit firm characteristics. The negative association is weaker if the two signatory auditors have attended elite schools or worked for one of the Big 4 audit firms. Conversely, it is stronger if the two signatory auditors are partners of their audit firm or if their audit firm has been sanctioned by regulators for failing to report financial misrepresentation. We further find that the social ties between the two auditors directly decrease firm value through impaired market confidence and indirectly via impaired audit monitoring and audit quality. Our results are robust when controlling for endogeneity and alternative measures of audit quality and firm value.

Our study makes several contributions to the extant literature. First, it attempts to analyse archival data to examine the social ties within the audit team, given that prior research has primarily focused on social relationships between external auditors and their clients (Guan et al., 2016; Kachelmeier et al., 2017; Kwon & Yi, 2018), between external auditors and the client audit committee (He et al., 2017), between external auditors and bankers (He et al., 2019), or between auditors and mutual fund managers (Chen et al., 2021). **We extend the literature on auditor characteristics from individual auditors to audit teams. Recently, research on social ties and accounting has started to explore in-team social ties and the impact on financial reporting quality (Fang et al., 2022; Kuang et al., 2020; Ramos et al., 2022). We contribute to this line of audit team research by providing a new perspective that the two signatory auditors, as the principal leaders in the audit engagement team, directly influence the output of the entire team (Cameran et al., 2018; Chen et al., 2020; Hossain**

et al., 2017). We also demonstrate that social ties between auditors and client executives and between auditors and client audit committee members become less pertinent after controlling for the two auditors' social ties. This result indicates that the two auditors' social ties reduce auditor integrity, which is an additional dimension of social ties leading to a collusive relationship.

Second, our study contributes to an emerging body of literature on the relationship between the social ties of the two signing auditors and audit quality by providing evidence from a relationship-based culture in which social ties are more prominent. Downar et al. (2021a) find that, in the German setting, when the concurring auditor and the lead auditor (equivalent to the review and the engagement auditor in China) speak the same dialect, it impairs audit quality. In contrast, Huang et al. (2021) find that a common employment history (defined as common audit engagement experiences) between lead and concurring partners in Taiwan is positively associated with audit quality and audit efficiency. However, only one aspect of social ties is examined in these studies while Guan et al. (2016) and Tan et al. (2021) highlight the need to consider a more comprehensive set of social ties. Our research responds to this call by including common employment/common engagement experiences and school and regional ties which make our results more robust. Compared with Downar et al. (2021a), we further control for client firm and audit firm fixed effects, which makes our empirical tests more rigorous and robust. Surprisingly, our results are significantly different from those of Huang et al. (2021). This contradiction does not arise solely due to the use of different proxies, as we find a negative association between social ties and audit quality irrespective of the proxy adopted for social ties (the aggregate proxy consisting of common employment, school and regional ties) or the two auditors' common engagement experiences, as defined by Huang et al. (2021). Therefore, the divergence between the results is likely due to the unique institutional setting in mainland

China, where relationship-based culture is complicated by state-owned enterprises (SOEs) and the Chinese government's control over the audit market (Liu et al., 2011).[1]

Finally, our study extends the work of Downar et al. (2021a) and Huang et al. (2021) by further investigating the valuation implications of social ties. We empirically demonstrate that the two auditors' social ties could affect firm value, directly and indirectly, thus enriching the extant literature in this regard (Fan & Wong, 2005; He et al., 2017; Tan et al., 2020).

Nevertheless, a question may be raised about the generalisability of our findings obtained from China. To some extent, this issue is alleviated by the similar findings in Germany (Downar et al., 2021a). We also believe that our findings are applicable to relationship-based countries, such as many Asia countries. Despite this, there is scope for further international studies to confirm whether our results could be generalised to other countries.

The remainder of the paper is organised into six sections. Section 2 provides a review of the pertinent literature and institutional background. Section 3 discusses the implications of social ties for audit outcomes and develops our hypotheses. Section 4 presents the data and research methodology. Section 5 presents the main empirical results. Section 6 provides additional analyses. Section 7 concludes the study by discussing the implications of the findings, the limitations of this study, and the directions of future research.

2. Literature review and institutional background

2.1 Auditor−client social ties and audit quality

As auditors usually interact with staff in different positions (e.g., top executives, audit committees, etc.) in their client firms, the extant literature has focused on auditor−client social ties and their impacts on audit outcomes. For example, Guan et al. (2016) examine the impact

[1] The differences of institutional ownership between China and Taiwan market provide evidence for the divergence between their results and ours, given by the evidence from the test for SOEs and non-SOEs by using Huang et al.'s (2021) social ties measure and our own (Section 6).

of auditor−executive social ties on audit quality and show that audit quality decreases when auditors are closely connected with their clients' executives. He et al. (2017) demonstrate that auditor−audit committee social ties can undermine auditors' monitoring efficiency and impair audit quality (e.g., by reducing the likelihood that auditors will issue modified opinions). Du (2019) explores auditor−CEO dialect sharing and observes that pre-IPO audit quality is reduced when CEOs and auditors share the same dialect. As one of a few experimental studies in this field, Kachelmeier et al. (2017) note that the social ties between auditors and client personnel influence audit adjustments only when financial misstatements are estimated (rather than accurately measured).

2.2 Audit team relationship and audit quality

The majority of extant studies on social ties have been conducted in cross-organisational settings (i.e., from a macro perspective). However, the role of social ties in an audit-team setting (a micro perspective) remains relatively unexplored. The close relationships within an audit team are unique, as most members usually have similar accounting educational backgrounds and comparable employment experience, which increases their degree of social similarity (Nahapiet & Ghoshal, 1998). As they work in a small team and conduct audits on a daily basis, they need to interact frequently, thereby enhancing the intimacy and familiarity between them (Morck & Yeung, 2003). Moreover, given that the career promotion of junior auditors usually depends on networking and relationships with their partners (Kornberger et al., 2011), there are considerable benefits of developing close links with other audit team members. It has been well documented that the quality of the audit conducted by a team depends upon the sum of the skills of individual auditors, as well as the fit in their personalities (Chin & Chi, 2009; Knechel et al., 2015; Zerni, 2012). According to Cameran et al. (2018), team performance also depends on the audit hours allocated to partners and managers in an audit team. Hossain et al. (2017) similarly note that audit team personnel assignment (i.e., the number

of senior auditors, assistant auditors, and other professional staff) influences audit quality in Japan. Most recently, Downar et al. (2021b) find that economic, social, and cultural capital matter for Big 4 audit partners in Germany. Therefore, close relationships between audit team members exert an impact on audit quality. We argue that social ties are also an important form of relationship within an auditor team and could consequently influence audit quality, which is the focus of this study.

2.3 The relationship between the two signatory auditors and audit quality

While the aforementioned studies have yielded important insights, none have focused specifically on the social relationship between the two signatory auditors (the smallest unit of an audit team), even though their relationship can impact their performance and thus audit quality. Although a few recent studies have begun to explore this topic, they have provided only narrow, partial, and mixed evidence in different institutional settings. Focusing on China, Lennox et al. (2020) have compared the influences of different incentives on the performance of engagement auditors and review auditors and their impact on audit adjustments. Chen et al. (2020) note that similarity in signatory auditors' characteristics correlates with higher earnings comparability in Chinese firms. Furthermore, He et al. (2021) and Koh et al. (2023) provide evidence that the diversity of signing auditors leads to higher audit quality in China. Focusing specifically on social ties between concurring and lead auditors in Germany, Downar et al. (2021a) note that sharing a dialect is adversely associated with audit quality. In contrast, according to Huang et al. (2021), in the Taiwanese setting, coworking experience between lead and concurring auditors has a positive effect on audit quality and efficiency.

2.4 The Chinese institutional background

China has unique institutions and its culture is more relationship-based than rule-based (Li & Filer, 2007). Social networks are one of the critical components of informal relationship-based channels and play an important role in Chinese society and economy. A typical social

network (*guanxi* in Chinese) comprises tight, close-knit networks (Yeung & Tung, 1996) and interpersonal connections (Xin & Pearce, 1996). It differs from friendships or networking patterns in the Western context (Liu et al., 2011), as it involves the exchange of favours (*renqing*) and "face" giving (*mianzi*) (Davies et al., 1995). Once *guanxi* is established in business practices, it can offer competitive advantages (Tsang, 1998), such as reduced transaction costs (Standifird & Marshall, 2000), smoother routines in business operations and faster administrative approvals (Dunfee & Warren, 2001). Nevertheless, it also has some negative effects, as it may lead to over-trustingness and higher favouritism (Uzzi, 1996), a lower cost of collusion (Khanna et al., 2015), and blind obedience (Brown & Warner, 1985; Nelson, 2006).

China also has some distinctive features with respect to audit practice, the availability of auditor information and policies on disclosures compared with Western countries. A particularly relevant distinctive characteristic is that audit reports must be signed by two auditors who hold a China Institute of Certified Public Accountants (CICPA) qualification. As a result, they both bear the same legal liabilities, and their performance is assessed by the quality of their audits. However, they play different roles in the audit process; one serves as the engagement (junior) auditor in charge of fieldwork, and the other acts as a review (senior) auditor (MOF, 2001, No. 1035). These two auditors must be independent of the client and must maintain objectivity, integrity, and competence when reviewing the work of the audit engagement team (CICPA, 2020, No. 1). In addition, the signatory auditors' personal demographic information is publicly available on the CICPA website. These special features motivate us to explore the impact of social networks on audit outcomes in China.

3. Hypothesis development

3.1 Signatory auditors' social ties and audit quality

In the two-signatory-auditors system, the engagement auditor and the review auditor are the most prominent audit team members, as they bear the ultimate responsibility for audit quality (MOF, 2001, No. 1035). They depend on their clients for revenue generation while having to meet the regulators' requirements (Newton et al., 2016). Despite this common responsibility, their respective roles in the audit process are different. The engagement auditor is responsible for conducting audits and generating revenue from clients, while the review auditor is in charge of compliance with the clients' and regulators' requirements to minimise the risk of reputation impairment and litigation (Lennox et al., 2020). These distinct roles also give rise to different incentives, with the potential to result in conflicts.

As the two signatory auditors work as team members, their social connections will influence their behaviour and decision-making process. According to social identity theory (Tajfel, 1970; Turner et al., 1979), individuals tend to identify with people who have similar characteristics—such as language, religion, and experience—and engage in social categorisation, identification, and comparison to exhibit in-group favouritism and out-group discrimination. When the two signatory auditors share social identities, they are more likely to form close ties and deal with auditing issues from an in-group perspective. Therefore, social ties could enhance their working relationship by bringing them closer.

Close social ties indicate high social similarity and familiarity (Haunschild & Beckman, 1998; Morck & Yeung, 2003; Nahapiet & Ghoshal, 1998), which is beneficial for reducing the information asymmetry between the two auditors (Connelly et al., 2011), thereby enhancing audit quality. They facilitate information transfer, advice seeking, and role coordination (McPherson et al., 2001) and even help convey some private and sensitive information between in-group members (Granovetter, 1973). Close social ties also facilitate the exchange of resources and increase the likelihood that the two auditors will seek advice from each other on complex, sensitive, and/or risky auditing issues (Anderson & Williams, 1996; **Kuang et al.,**

2022), thereby improving audit quality. Moreover, social ties promote trust (Burt, 2000), which in turn reduces psychological distance and defence (Clark & Mils, 1982; Granovetter, 2005; Krackhardt & Stern, 1988). Based on their study of superior−subordinate relationships, Bauer and Green (1996) similarly note that frequent advisory interactions improve overall performance.

In sum, extant research suggests that close social ties between the two signatory auditors reduce information asymmetry, increase cooperation, and enhance trust, thus ensuring that they will work jointly on discovering client firms' accounting manipulation and irregularities. **It allows better detection of the clients' earnings management and benchmark-beating (Francis, 2011; Fang et al., 2022; Ramos et al., 2022). It also allows better verification of aggressive accounting (Eli et al., 2019).** Besides, it enhances their professional competence which is a major determinant of audit quality.

Such benefits notwithstanding, social ties are a double-edged sword regarding their impact on audit quality. They can facilitate productive collaboration between the two auditors that could improve audit quality but can also lead to collusion between the two auditors and thus undermine the entire audit process.[2] According to Khanna et al. (2015), social ties can also reduce the cost of collusive violation, which may be detrimental to auditor integrity and objectivity. If the two auditors choose to collude due to their close social ties, such behaviour would undermine audit quality. Research on CEO−board social ties shows that overly familiar relationships between CEOs and board members result in favouritism and thus lenient monitoring (Fracassi & Tate, 2012; Nguyen, 2012). The same argument also applies to the behaviour of the two signatory auditors. Given that the review auditor shoulders the primary responsibility for supervision and monitoring in audit engagement (Lennox et al., 2020), social

[2] In practice, in China, the primary role of supervision and monitoring is typically assigned to the review auditor (Lennox et al., 2020).

ties between the two auditors can promote over-trustingness and favouritism within in-group members (Uzzi, 1996), thereby undermining the review auditor's role of supervising the audit team led by the engagement auditor. This favouritism could lead to a high audit materiality or reduce necessary analytical audit procedures, substantive tests and aggressive accounting verification, thereby diminishing the likelihood of problem discovery and impairing audit quality.

In addition, collusion may occur when the two signatory auditors have unequal status in the audit firm (e.g., different partnership levels) or have different levels of knowledge and experience (e.g., the two auditors are in a teacher−student or a superior−subordinate relationship), as the inferior party may exhibit blind obedience and follow in-group social consensus blindly (Brown & Warner, 1985) due to the fear of reprisal (Nelson, 2006). Moreover, a collusive alliance is more likely to be formed if auditors are under managerial pressure to retain clients in the subsequent year (Chen et al., 2020). As a result, they may even turn a blind eye to client firms' financial misstatements, which not only impairs audit quality but also compromises audit independence. These competing arguments lead to our first null hypothesis:

Hypothesis 1: Social ties between the two signatory auditors have no association with audit quality.

3.2 Signatory auditors' social ties and firm valuation

Drawing upon social identity theory, we argue that strong social ties between the two signatory auditors may lead to a stronger value-enhancing alliance (cooperation) or a value-decreasing alliance (collusion) than if they were not socially connected. Such opposite alliances could convey different information about the effectiveness of auditor monitoring to market participants, thereby influencing market confidence and firm valuation. According to He et al. (2017), firm valuation tends to be lower when external auditors have social connections with

their clients' audit committees, as this is perceived to compromise auditor objectivity and effectiveness (*ex ante* assessment), thereby impairing market confidence in the audit firm and their client firms.[3] Similarly, we expect that the effect of signatory auditors' social ties could directly translate to a high (low) firm valuation, as it would impact market confidence and thus the value of client firms. Moreover, the signatory auditors' social ties could also indirectly influence firm valuation via audit quality. While capital market players wish to enhance audit quality, high audit quality can have undesirable effects on firm valuation. For example, Nguyen et al. (2020) observe that high audit quality can constrain client firms' innovation output by attracting more nondedicated institutional investors, who tend to put pressure on management for short-term returns, thus undermining firm value. Previous research also indicates that a high (low) audit quality (*ex post* occurrence) alleviates (exacerbates) information asymmetry and agency problems perceived by investors, which eventually translates into a high (low) firm value (DeFond & Zhang, 2014; Fan & Wong, 2015; Guedhami et al., 2014). Therefore, we expect a similar influence of social ties between the two signatory auditors on firm valuation via audit outcomes. Because it is difficult to judge, a priori, which effect—cooperation or collusion—dominates, we propose the following null hypotheses:

Hypothesis 2: Social ties between the two signatory auditors have no association with firm value.

4. Data and methodology

4.1 Sample and data

We collected data on nonfinancial Chinese companies listed on the Shanghai or Shenzhen Stock Exchange from 2004 to 2018, drawing the audit firms' name, signing auditors' name and stock market data and financial data from the China Stock Market and Accounting

[3] Note that discounted firm value is directly based on *ex ante* assessment of the potential effectiveness of auditor monitoring, rather than through an *ex post* occurrence of impaired audit quality.

Research (CSMAR) database. **Our sampling period starts in 2004 when data on state ownership information and background information on firms' management team and audit committee members became available**. From 31,434 firm-year observations spanning the 2004−2018 period, we deleted (1) 759 observations in which the names of signatory auditors are missing; (2) 9,249 observations from which auditor personal information was missing; and (3) 10,073 observations that did not include information on the auditors' educational and career background. Our final sample consists of 11,353 firm-year observations.

To collect the demographic, educational, and employment information of signatory auditors, we first downloaded the names of audit firms and signatory auditors on audit reports for each listed firm included in our sample from the CSMAR database. If their names were not available in the CSMAR database, we retrieved them from the signed audit reports. To obtain personal demographic information of each signing auditor, we search on China Institute of Certified Public Accountants' (CICPA) website (http://cmis.cicpa.org.cn), the enquiry system compiled by the CICPA. This website is publicly available, providing data including auditors' affiliation, within-audit firm positions, partnership, educational background, major, CPA ID, along with their name, gender, and date of birth. We collected this personal information for each signing auditor. Lastly, data for individual auditors' working experience were retrieved from a private database compiled by CSRC (China Securities Regulatory Commission). The downloaded and hand-collected information allows us to construct multiple dimensions of social ties.

4.2 Regression model

To test the implications of the social ties between the two signatory auditors for audit quality, we apply the following baseline regression model:

$$Audit\ Quality = \alpha + \beta_1\ Social\ Ties + Controls + Year_t + Clientfirm_k + Auditfirm_j + \varepsilon \quad (1)$$

We control for client firm and year fixed effects in the regression. Considering that the distribution of audit quality may vary across audit firms in China, we also control for audit firm fixed effects. To minimise the effects of outliers, we winsorise all continuous variables at the 1st and 99th percentiles.

4.3 Dependent variable (audit quality) measures

Audit Quality is the dependent variable. Accordingly, we measure audit quality by auditors' propensity to issue modified opinions and client firms' discretionary accruals (DeFond & Zhang, 2014; Menon & Williams, 2004). In accordance with the Chinese auditing standards and following the strategy adopted in prior studies on China (Chan & Wu, 2011; Chen et al., 2008; Chen et al., 2010), we classify audit opinions into clean opinions and modified opinions. We define a dummy variable *Opinion,* which is coded as 1 if the audit opinion is a clean opinion and 0 otherwise. A higher value of *Opinion* indicates a higher likelihood of clean (favourable) audit opinion issuance,[4] potentially implying a lack of professional scepticism or independence (Guan et al., 2016) and hence lower audit quality (an inverse proxy of audit quality). **To measure discretionary accruals, we adopt the following performance-adjusted accrual model (Kothari et al., 2005):**

$$\frac{TA_{i,t}}{A_{i,t-1}} = \varphi_0 + \varphi_1 \frac{1}{A_{i,t-1}} + \varphi_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \varphi_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varphi_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where $TA_{i,t}$, $A_{i,t-1}$, $\Delta REV_{i,t}$, $PPE_{i,t}$ and $ROA_{i,t}$ are total accruals, lagged total assets, year-to-year change in revenue, gross amount of property, plant and equipment and return on assets respectively. The model is estimated for each industry-year, and its residuals are identified as discretionary accruals.

[4] It is the actual audit opinion on the audit report rather than the probability of receiving the opinion.

4.4 Independent variable (social ties) measures

We construct a proxy (*Social Ties*) of mutual social experiences between the two signatory auditors to measure social ties. Jacobs (1979, 1982) has argued that social ties are established through shared experiences (e.g., attending the same school or college or having a close working relationship). Authors of prior research on social ties and economic outcomes have tended to focus primarily on the connections established in school (e.g., Cohen et al., 2008; Cohen et al., 2010; Guan et al., 2016), which are believed to offer distinctive advantages,[5] such as a natural sense of closeness and trust developed at a young age (McPherson, 2001; Richardson & Helen, 1940). We use *School Tie* to denote education-based relationships.

We consider *Regional Tie* to proxy for regional experiences such as attending colleges or universities in the same province or city.[6] Having spent years in a particular province or city would induce a sense of familiarity with that region, including its dialects, geography, history, and culture. Such knowledge would later facilitate social exchange and trust building among professionals who have the same regional background.

In addition, in line with the methodology adopted by He et al. (2017), we also use employment affiliations (*Employment Tie*) as another proxy for social ties, as common employment experiences could serve as a basis for personal friendships. In sum, our measure comprises three types of social tie: alumni connection, regional experience and employment affiliations.

We define these three types of social tie as follows: (1) *School Tie* is coded as 1 if the two signatory auditors have graduated from the same college or university and 0 otherwise; (2) *Regional Tie* is coded as 1 if the two signatory auditors have attended colleges or universities

[5] According to Kown and Yi (2018), school ties offer several distinctive advantages, as they often create more homogamy than other social ties. In addition, the associated measurement errors and endogeneity concerns are less pronounced because such experiences are time-invariant.

[6] Birthplace could also be used to measure the townsmen tie, but such data is not readily available. Although we have manually examined the signing auditors' information spanning the 2004−2018 study period, only 1,640 of the audit reports included identity numbers. Among these 1,640 individuals, 796 come from the same province, and 382 come from the same city. In addition, their regressions for audit quality are not significant.

in the same province or city[7] and 0 otherwise; and (3) *Employment Tie* is coded as 1 if the two signatory auditors have audited the same client or have been appointed as independent directors in the same company and 0 otherwise. As the two auditors may have more than one type of social tie, to examine their joint effect, we use an aggregate measure of *Social Ties* that takes a value from 0 to 3 to indicate the extent of their social connections.

4.5 Control variable measures

We control for client company financial and nonfinancial characteristics that may affect audit quality (e.g., Chan & Wu, 2011; Chen et al., 2010; DeFond et al., 2002). We include *ROA*, the ratio of net profit to year-beginning total assets; *REC*, the ratio of net accounts receivable to total assets at the year-end; *INV*, the ratio of inventories to total assets at the year-end; *LOSS*, a dummy variable that equals 1 for firms with negative net income and 0 otherwise; *SIZE*, measured as the natural logarithm of total assets; *LEV*, the ratio of total liabilities to total assets; *LIQ*, the ratio of current assets to current liabilities at the year-end; *MB*, market-to-book ratio; *AGE*, the natural logarithm of the number of years the client has been listed; *SOE*, a dummy variable that equals 1 for state-owned enterprises and 0 otherwise; *CFO*, the cash flow from operations to total assets at the start of the financial year; and *GROWTH*, the difference between sales in the current and the prior year divided by prior-year sales.

In addition, we also control for the following auditor characteristics: *BIG4*, a dummy variable that equals 1 if the client uses one of the international Big Four audit firms and zero otherwise; *TOP10*, a dummy variable that equals 1 if the client uses one of the top ten domestic audit firms and 0 otherwise; *CoworkYear*, the total number of years in which the two signatory auditors have collaborated on and signed an audit report; *Tenure_AF*, the number of consecutive years that an audit firm has been with the same client firm; *Tenure_Aud*, the

[7] To avoid overlapping measurements, we exclude those observations if the two signatory auditors have attended the same college or university because they are already captured by *School Tie*.

number of consecutive years that the two signatory auditors have been with the same client firm; *Expert_AF*, a dummy variable coded as 1 if an audit firm is an industry specialist (i.e., has the largest number of clients within an industry-year) and 0 otherwise; and *Expert_Aud*, a dummy variable coded as 1 if either of the two signatory auditors is an industry specialist (i.e., has the largest number of clients within an industry-year) and 0 otherwise. We define all variables in the Appendix.

4.6 Descriptive statistics

We display sample distributions by year in Table 1 and the summary statistics in Table 2. **In Panel A of Table 1, we display the number of client firms in which there is at least one social tie.** We partition our observations into two groups, client firms with socially connected auditors (i.e., auditors with one or more types of social tie) and client firms without socially connected auditors, and report the time-series distribution of these two groups. During the entire sampling period, we identify 4,112 client firms with socially connected auditors, approximately 36.2% of the firm-year observations. In the 2004−2008 period, this percentage increased to over 45%, which was considerably higher, indicating that the market was less developed and that the CSRC's monitoring of signatory auditors was inadequate. However, from 2011 to 2018, the social ties between signatory auditors declined from 38.7% to 31.1%, which indicated that as the market matured, the CSRC regulations regarding auditors became increasingly strict. **Since there may be more than a single social tie, we examine each of the three types of social tie separately. In Panel B of Table 1, we display the unit of types of social ties of the 4,112 observations of client firms with socially connected auditors.** The Panel reveals that school, regional and employment ties exist in 14.76%, 52.68%, and 32.56% of the sample, respectively.

[Insert Table 1 about here]

Table 2 displays the descriptive statistics, whereby *Social Ties* takes a value from 0 to 3, representing the total number of social ties identified in the observations. Its mean value of 0.395 indicates that the two signatory auditors share 0.395 social ties on average. **The variable *DAC* has a mean (median) of 0.009 (0.011).** The mean (median) of *Opinion* is 0.941 (1.000), indicating that approximately 94.1% of client firms in our observation set received a clean opinion. *Tenure_Aud* and *CoworkYear* capture auditors' coworking stability within the audit team. The mean values of *Tenure_Aud* (3.262) and *CoworkYear* (4.608) suggest that there was considerable stability in the auditing firms' relationships with their clients as well as in the two signatory auditors' relationships.

[Insert Table 2 about here]

5. Empirical results

5.1 Auditor social ties and audit quality

To test Hypothesis 1, we perform the regression given by Equation (1). The results are presented in Panel A of Table 3. Since social ties with a client firm are likely to persist over time, the standard errors are clustered at the client firm level in our regression. Columns (1) and (2) and Columns (3) and (4) show the effects of two-auditor aggregate social ties on discretionary abnormal accruals (obtained using an OLS regression model) and audit opinion (determined using a probit regression model), respectively. The results of the tests including client firm characteristics are reported in Columns (1) and (3), while the results of the tests including both client firm and audit firm characteristics are presented in Columns (2) and (4). As seen in Columns (1) and (2), the coefficients of *Social Ties* are positive and statistically significant at the 1% level, implying that the amount of discretionary abnormal accruals is positively associated with social ties between the two signatory auditors. **Moreover, the coefficient of *Social Ties* in Column (2) is 0.005 (*t-stat* = 3.05, *p-value* = 0.002), and an increase in *Social Ties* increases *DAC* by 0.5%, which represents approximately 55.6% of**

the sample mean of *DAC* (mean = 0.009). These magnitudes are economically meaningful.[8]

The results reported in Columns (3) and (4) in Panel A are based on an alternative audit quality measure, i.e., the propensity for receiving a clean audit opinion. As shown in Column (4), after controlling for client firm and audit firm characteristics, the coefficient of *Social Ties* becomes 0.112, with a *t-value* of 1.97 and *p-value* of 0.049, which is positive and statistically significant. Moreover, **an increase in *Social Ties* increases the propensity for receiving a clean audit opinion by 11.2%, which represents approximately 11.9% of the sample mean incidence of clean opinion (mean = 0.941).** Therefore, the magnitude is economically significant. **Overall, these preliminary tests show that social ties between the two signatory auditors were detrimental to audit quality by undermining auditors' monitoring. This is in line with our argument of a collusion alliance between the two auditors associated with social ties. We have developed two explanations in Section 3.1 for collusion alliance leading to impaired audit quality, one is the favoritism, and the other is blind obedience. The explanation of favoritism leading to collusion is more prevalent adopted by prior studies on social ties (Guan et al., 2016; He et al., 2017; Fracassi & Tate, 2012; Nguyen, 2012). The favoritism between two signing auditors could lead to a high audit materiality or reduce necessary analytical audit procedures, substantive tests and aggressive accounting verification, thereby diminishing the likelihood of problem discovery and impairing audit quality. On the other hand, we think that blind obedience scenario usually occurs when the audit team has the tendency of doing "wrong things", like turning a blind eye to client firms' financial misstatements which they have known it (Brown & Warner, 1985; Nelson, 2006). This may lead to the risk of an actual occurrence of sanction**

[8] Since the sample mean of operating returns on assets is 0.056 (untabulated), the economic magnitude can also be interpreted as the operating returns on assets audited by socially connected auditors would be about 8.9% higher than those audited by auditors without social ties.

made by CSRC and/or MOF.[9] It is likely that both scenarios exist, but we are unable to obtain the data to test which scenario dominates either. This task will be left for future research. The coefficients of *ROA*, *LEV*, *LIQ*, *SIZE*, *GROWTH*, and *SOE* are statistically significant, reflecting the low audit quality in larger and growing firms characterised by higher profitability, higher leverage, and lower liquidity. These coefficients are consistent with our expectations as well as the results obtained in extant audit quality studies (e.g., Chan & Wu, 2011; Chen et al., 2010; DeFond et al., 2002; Ghosh & Moon, 2005).

[Insert Table 3 about here]

5.2 Moderating effects of auditor and audit firm characteristics

In Table 4, we examine the potential moderating effects of auditor characteristics and audit firm characteristics on the link between social ties and the risk of financial misstatements by using the following regression model:

$$Audit\ Quality = \alpha + \beta_1\ Social\ Ties + \beta_2\ \mathrm{X} + \beta_3\ Social\ Ties * X + \gamma Controls + Year_t + Clientfirm_k + Auditfirm_j + \varepsilon \quad (3)$$

Panel A displays the results for the *DAC* model and Panel B shows the results for the *Opinion* model. Firstly, we consider the position[10] of a signatory auditor in the audit firm and define a dummy variable *Partner*, coded as 1 if one of the signatory auditors is a partner and 0 otherwise. In Panel A of Table 4, Column (1) shows that the coefficient of the interaction term *Social Ties*Partner* is 0.017 (*t-stat* = 3.49, *p-value* = 0.00). This result shows that stronger social connections between partners could compromise audit quality to a greater extent, as partners usually play a more influential role in the audit engagement team.

To examine whether education strengthens the influence of social connections on audit quality, we regard the "Project 211" and "Project 985" academic institutions in China as elite

[9] This effect on irregularity has been tested in our robustness test (Panel D of Table 10).
[10] Based on our observations, signatory auditors' positions include partner, executive director, engagement team director, chief accountant, and accountant. We focus on partners in our study because this position best accounts for auditors' incentives and audit quality compared to other positions that a signatory auditor could hold in a firm.

universities.[11] Column (2) of Panel A shows that *School Tie*Elite School* is the interaction term with a coefficient of -0.014 (*t-stat* = -1.87, *p-value* = 0.061), implying that signatory auditors from elite universities may provide higher-quality audits. This result is consistent with the findings reported by Lichtenstein and Fischhoff (1997) that different education levels influence students' thinking and values to different degrees. It also concurs with the evidence provided by Kallunki et al. (2019) that auditors who have graduated from elite schools could provide audits of higher quality given their better human capital.

Columns (3)-(4) of Panel A shows the impacts of audit firm-level characteristics on audit quality. As seen in Column (3), the coefficient of *Social Ties*BIG4* is -0.047 (*t-stat* = -2.60, *p-value* = 0.009), suggesting that working for one of the Big 4 audit firms can alleviate the negative effect of social ties on audit quality because Big 4 audit firms are expected to have stricter professional and ethics requirements and access to more resources that are conducive to high-quality audits (Francis and Yu 2009; Choi, 2010). In Column (2), we report the effects of audit firm irregularity on the relationship between social ties and audit quality. Following the approach adopted by He et al. (2017), we estimate *DAC* regression after controlling for the *Irregularity* variable[12] and its interaction term *Social Ties*Irregularity* to determine whether the impact of *Social Ties* on *DAC* depends on the actual occurrence of financial irregularities. In Column (4), the coefficient of *Irregularity* is negative and statistically significant (i.e., -0.019, *t-stat* = -1.95, *p-value* = 0.051), indicating that the actual occurrence of financial misrepresentations may not lead to lower audit quality. However, such a tendency reverses when the two signatory auditors have social ties. The coefficient of *Social Ties*Irregularity* is 0.077 (*t-stat* = 2.03, *p-value* = 0.042), implying that the negative impact of social ties on audit

[11] Project 211 is a government initiative aimed at increasing the number of Chinese universities ranked within the top 100 in the 21st century, whereas Project 985 is a government initiative launched on May 4, 1998 to allocate more funds to 39 outstanding Chinese universities.

[12] *Irregularity* is a dummy variable coded as 1 if the audit firm has been sanctioned by the CSRC and/or MOF due to its failure to report the client firm's accounting frauds or irregularities and 0 otherwise. It has a mean (median) of 0.024 (0.000), showing that the CSRC and MOF sanctioned approximately 2.4% of client firms included in our observations.

quality depends on an actual occurrence of financial misreporting, in line with the results obtained by He et al. (2017). **We also repeat the analysis of the interaction between social ties and auditor and audit firm characteristics using *Opinion* as the dependent variable in Panel B of Table 4, the coefficients of interaction terms for *Opinion* model are consistent with those in the *DAC* table, except that the *Social Ties*Partner* have an insignificant coefficient.**

[Insert Table 4 about here]

5.3 Social ties between the two signatory auditors and firm value

To test Hypothesis 2, we examine not only the direct link between social ties and firm value but also the mediating role of audit quality in this relationship. To this end, we undertake a path analysis. Path analysis belongs to a class of structural equation models (SEM) (Bhattacharya et al., 2012) that test a mediation model which assumes that some source factor affects an outcome through intervening forces, i.e., indirect factors or mediators, and that the source factor may also affect the outcome directly (Baron & Kenny, 1986). While the direct path contains only one path coefficient, the indirect path includes two path coefficients between the source variable and the mediating variable and between the mediating variable and the outcome variable. The multiplication of these two path coefficients reflects the overall magnitude of the indirect path. Path analysis and SEM take the following form:[13]

$$DAC = \alpha + \gamma_1 Social\ Ties + Controls + Year_t + Clientfirm_k + Auditfirm_j + \varepsilon \quad (4)$$

$$Tobin's\ Q = \alpha + \beta_1\ Social\ Ties + \beta_2\ DAC + Controls + Year_t + Clientfirm_k + Auditfirm_j + \varepsilon \quad (5)$$

[13] In addition to control variables that are already included in our audit quality model, there are additional financial characteristics and board characteristics that may affect firm value (Cater et al., 2003; Hermalin & Weisbach 2000; Tan et al., 2021; Villalonga & Amit, 2006). Specifically, we include several additional control variables in Equations (5) and (7): *Beta risk*, calculated as $Cov(R_i, R_m)/Var(R_m)$, where R_i is the return of $Firm_i$ and R_m is the market return; *Director_Num*, measured by the total number of board members; and *Duality*, a dummy variable coded as 1 if the CEO is also the chairman of the board and zero otherwise. Although these control variables have been included in firm value models in prior studies, they are not commonly used in models for estimating audit quality, and incorporating them into our model does not change our main results. Thus, to make our audit quality specification consistent with that adopted by other authors, we do not tabulate them.

$$Opinion = \alpha + \delta_1 Social\ Ties + Controls + Year_t + Clintfirm_k + Auditfirm_j + \varepsilon \quad (6)$$

$$Tobin's\ Q = \alpha + \beta_1\ Social\ Ties + \beta_3\ Opinion + Controls + Year_t + Clientfirm_k + Auditfirm_j + \varepsilon \quad (7)$$

Following Table 5 in Xiao et al. (2011), Table 4 in Bauer et al. (2020), and Table 5 in Bauer et al. (2021), we construct Panel A of Table 5 to present the results of the path analysis. This panel focuses on illustrating whether social ties affect firm valuation on their own or through the mediating path of audit quality (*DAC* and *Opinion*). Moreover, following (Tables 3-4 in Francis et al. (2021) and Table 12 in Deng et al. (2018)), we also construct Panel B of Table 5 to report the full results of SEM which indicate total, direct and indirect effects. Columns (1) and (3) in Panel B relate to the first-stage SEM (*Equation (4)* for the *DAC* model and *Equation (6)* for the *Opinion* model). Columns (2) and (4) in Panel B relate to the mediating effect of *DAC* (*Equation (5)*) and the mediating effect of *Opinion* (*Equation (7)*). One advantage of using the form of SEM regression (Panel B) is that it not only considers the mediating effect (we can see the coefficients of mediator in the regressions and calculate their direct/indirect effect) but is also able to present the results of the full regressions.[14]

In Panel A, the direct path coefficient between social ties and firm value β_1 [*p* (*Social Ties, Tobin's Q*)] is significantly negative (*coef* = -0.063, *t-stat* = -3.12, *p-value* = 0.002), indicating that auditors with social ties lower firm value. Then, we consider the first indirect path through *DAC*. The path coefficient between social ties and *DAC* is significantly positive (*coef* = 0.005, *t-stat* = 3.05, *p-value* = 0.002), and the path coefficient between *DAC* and firm value is significantly negative (*coef* = -0.448, *t-stat* = -4.32, *p-value* = 0.000). The total mediated path (indirect path) for *DAC* $[\gamma_1 \times \beta_2 = p\ (Social\ Ties, D\ AC) \times\ p\ (DAC,\ Tobin's\ Q) = 0.005 \times -0.448]$ is significantly negative (*t-stat* = -1.70, *p-value* = 0.090), with a coefficient of -0.002. Importantly, the results imply that the proportion of the total effect attributed to the

[14] That is why we present the *Tobin's Q* models in Tables 6-10 following the structure of Panel B of Table 5.

direct path is approximately 96.9%, but that attributed to *DAC* is only 3.1%. These results are also indicated in Panel B. As also shown in Column (2), the coefficient of the direct effect of social ties (β_1) is significantly negative, implying that social ties could directly translate to firm value. Furthermore, *DAC* has a negative and statistically significant coefficient. The total mediated path (indirect path) for *DAC* has a significantly negative coefficient of -0.002 ($\gamma_1 \times \beta_2 = 0.005 \times -0.448$), which is the same as the figure in Panel A.

Next, we turn to the indirect effect through *Opinion*. In Panel A, the direct path coefficient between social ties and firm value is significantly negative (*coef* = -0.062, *t-stat* = -3.06, *p-value* = 0.002), indicating that auditors with social ties are more likely to issue clean opinions. The total mediated path (indirect path) for *Opinion* [$\delta_1 \times \beta_3 = p\ (Social\ Ties, Opinion) \times$ p $(Opinion,\ Tobin's\ Q) = 0.112 \times -0.214$] is significantly negative (*t-stat* = -2.11, *p-value* = 0.035), with a coefficient of -0.024. The proportion of the total effect of social ties on audit quality that is reflected by audit opinion is 27.9%, whereas that attributed to the direct path is approximately 72.1%. These results are also revealed in Panel B, as also shown in Column (4). The coefficients of the direct effect of social ties (β_1) are significantly negative at the 1% level, implying that social ties could directly translate to firm value. Furthermore, *Opinion* has negative and statistically significant coefficients at the 1% level. The total mediated path (indirect path) for *Opinion* has a coefficient of -0.024 ($\delta_1 \times \beta_3 = 0.112 \times -0.214$), which is the same as the figure in Panel A.

Overall, the evidence from Table 5 suggests that the negative effect of social ties between the two signatory auditors on firm value is partially mediated by audit quality. Specifically, the negative impact of social ties on firm value can be partially explained by low audit quality, captured by the increase in abnormal accruals and the likelihood of issuing a more favourable (clean) audit opinion. The results also imply that social ties play a more critical role in directly translating to firm value than indirectly translating via audit quality.

[Insert Table 5 about here]

5.4 Different types of social tie

To determine the influence of different types of social tie on our dependent variables, we repeat the regression of audit quality (Table 3) and firm value (Table 5) by using the three measures we adopt to capture social ties (school, regional and employment ties) as separate test variables. The dependent variables in Columns (1)−(3) of Table 6 are audit quality measures of *DAC, Opinion*, and firm value proxy *Tobin's Q*, respectively. According to the *DAC* model in Column (1) of Table 6, the three types of social tie (school, regional, and employment) are positively and significantly associated with audit quality. *School Tie* (*coef* = 0.011, *t-stat* = 2.97, *p-value* = 0.003)*, Region Tie* (*coef* = 0.004, *t-stat* = 1.75, *p-value* = 0.079) and *Employment Tie* (*coef* = 0.010, *t-stat* = 2.64, *p-value* = 0.008) have statistically significant coefficients. In the *Opinion* model in Column (2) of Table 6, *School Tie* (*coef* = 0.006, *t-stat* = 1.92, *p-value* = 0.076), *Region Tie* (*coef* = 0.018, *t-stat* = 2.46, *p-value* = 0.014) and *Employment Tie* (*coef* = 0.006, *t-stat* = 3.68, *p-value* = 0.002) emerge as statistically significant social ties. The results reported in Columns (3)-(4) indicate that in the *Tobin's Q* model, all types of social tie are negatively and significantly associated with firm value, although at different levels of significance. **The coefficients for *DAC* and *Opinion* are still negative and statistically significant, in line with the findings in Table 5 that the negative impact of social ties on firm value can be partially explained by low audit quality.** In sum, all types of social tie considered in our analysis contribute to the impairment of audit quality and firm valuation.

[Insert Table 6 about here]

6 Additional analyses

In this section, we first address endogeneity issues by using change analysis, the three-stage least squares approach, and a Heckman two-stage procedure before conducting several additional robustness checks.

6.1 Endogeneity

Change analysis

In our main regression tests presented in the earlier sections, we control for client firm and audit firm characteristics. However, it is possible that some unobservable or difficult-to-measure characteristics may also drive our outcomes. To address this concern, we perform a change analysis, which allows us to account for unobservable firm characteristics. For this purpose, we modify Equations (1), (5) and (7) and replace all variables with their differences between years *t−1* and *t*, denoted by a prefix Δ. We thus construct Δ *Social Ties* to capture the year-to-year change in all three sources of social ties, where *Social Ties* is the aggregated value of *School Tie*, *Regional Tie* and *Employment Tie*. As Δ *Social Ties* denotes the change in *Social Ties* from year *t−1* and *t*, its higher (lower) value indicates that the social connections between the two signatory auditors become more (less) strong. In Table 7, the dependent variables in Columns (1)-(4) are changes in audit quality and firm value (*DAC*, *Opinion*, and *Tobin's Q*) from year *t−1* and *t*, denoted by adding a prefix Δ. The coefficients of Δ *Social Ties* remain positive in the *DAC* and *Opinion* models and negative in the *Tobin's Q* model, which is consistent with our main findings.

[Insert Table 7 about here]

Three-stage least squares approach

To overcome any potential endogeneity regarding the relationship between social ties and audit quality, we adopt a three-stage least squares (3SLS) full-information approach. According to Zellner and Theil (1962), 3SLS method combines two-stage least squares regression and multivariate seemingly unrelated regression estimation and considers the covariances across equation disturbances. In the first stage, we regress the actual social ties values on *IV_Social Ties* and controls. Following the strategy employed by Downar et al. (2021a), we construct an instrumental variable *(IV_Social Ties)* for social

ties using the average social ties between the review auditor and all counterfactual engagement auditors (excluding the actual engagement auditor) of the same audit firm in a particular year. Our IV fulfils the relevance condition because a higher value of social ties between the actual review auditor and all counterfactual engagement auditors results in a higher value of social ties between the actual review auditor and engagement auditors. In addition, our IV fulfils the exclusion condition because the social ties between those auditors not involved in the specific client's audit may not influence our outcome variables.[15] Table 8 displays the results yielded by the 3SLS regressions. The first-stage results reported in Columns (1), (3) and (5) show that the coefficients of *IV_Social Ties* are positive and statistically significant. In the second stage, estimates for the covariance matrix of equation disturbances are determined. These estimates are dependent on the residuals from the first stage. In the third stage, we apply a generalised least squares (GLS) equation. The predicted social ties values in the first stage, along with the covariance matrix of disturbances in the second stage are used in the GLS. The third-stage results of 3SLS across the audit quality and firm value models are presented in Columns (2), (4), (6) and (7). The relation between instrumented social ties and *DAC* and *Opinion* respectively continues to have positive and statistically significant coefficients, whereas the relationship with *Tobin's Q* has a negative and statistically significant coefficient. These results could thus mitigate the concern of potential endogeneity regarding the relationship between the independent variables and the dependent variable.

[Insert Table 8 about here]

[15] As Larcker and Rusticus (2010) note, a concern of using such means as instruments is that these instruments have both the exogenous and the endogenous components of the original variables. However, as suggested by Francis et al. (2021), the concern from Larcker and Rusticus (2010) could be alleviated to the extent that the endogenous component of average IV decreases when we aggregate to the mean and when we exclude the values of the actual observations in the calculation of the IV. Some top journal papers published after Larcker and Rusticus (2010) (e.g., Lin et al., 2011; Lin et al., 2013; Francis et al. 2021) have continued to use average IV after addressing the concern noted in Larcker and Rusticus (2010). In addition, we have confirmed that our IV is valid through underidentification and weak-identification tests.

Heckman two-stage procedure

Another concern is the possibility that the choice of social-tie auditors is associated with self-selection bias. In such a case, endogeneity could lead to inconsistent estimation of our resulting coefficients (Heckman, 1979). To check whether our observations are subject to self-selection bias, we use a Heckman two-stage approach, in which we estimate the likelihood of a firm having social-tie auditors in a first-stage model. Then, we include the inverse Mills ratio (IMR) generated based on this first-stage regression as a control in our second-stage audit quality and firm value models. In Panel A of Table 9, we present the results for the first-stage regression of the Heckman procedure. In addition to control variables, we also include *IV_Social Ties* and city fixed effects in the first-stage regressions as exclusion restrictions.[16] Using these estimated models, we estimate the IMR, which we use to control for self-selection in our second-stage model. We include the IMR in our audit quality model (Columns (1)-(2)) and firm value model (Columns (3)-(4)). After controlling for self-selection, the coefficients on *Social Ties* remain positive and significant in the audit quality model and negative and significant in the firm value model. Importantly, across both models, the coefficients of the IMR are insignificant, which indicates that selection bias does not seem to play a substantial role in our research.

[Insert Table 9 about here]

6.2 Robustness checks

In this section, we report the results of several robustness checks. First, prior studies have documented that audit quality is impaired when external auditors and audit committee members are socially connected (He et al., 2017) and when auditors are connected to client executives (Guan et al., 2016). We control for these connections. Following the these studies,

[16] We control for city fixed effects following the Heckman procedure described by Guan et al. (2016). *IV_Social Ties* is defined earlier in the section *Three stage least-squares approach.*

we define *AC Tie* and *MGT Tie.* In Columns (1) and (3) in Panel A of Table 10, for both audit quality models in which *DAC* and *Opinion* serve as dependent variables, we control for *AC Tie* and *MGT Tie*. Consistent with the findings reported by Guan et al. (2016) and He et al. (2017), the coefficients of *AC Tie* and *MGT Tie* are positive and statistically significant in both *DAC* and *Opinion* models, indicating that social ties between auditors and clients could impair audit quality. Interestingly, in Column (2), when we include our main test variable *Social Ties* in the *DAC* model, the significance levels of *AC Tie* become weaker and the *MGT Tie* coefficient is no longer statistically significant. As shown in Columns (2) and (4), our test variables *Social Ties* have positive and statistically significant coefficients, suggesting that our test variable (the social ties between the two signatory auditors) is still influential. Overall, after controlling for other forms of social ties, we can conclude that the social ties between the two signatory auditors still result in the impairment of audit quality.

Second, in addition to discretionary accruals and audit opinion, we use alternative accrual measures of audit quality, such as the absolute value of discretionary accruals (|*DAC*|) (DeFond & Zhang, 2014) and abnormal working capital accruals (*DDAC*) based on the Dechow and Dichev model (Dechow & Dichev, 2002). The positively significant coefficients of *Social Ties* on |*DAC*| and *DDAC* in Panel B of Table 10 are consistent with the results for the abnormal accrual model yielded by our main analyses.

Third, the positive effect of social ties on accrual-based earnings management may arise from real earnings management (*REM*), as the two practices are often interrelated (Zang, 2012). To rule out the effects of *REM*, we include a client firms' *REM* variable (Cohen & Zarowin, 2010). The results reported in Panel C of Table 10 show that the effect of social ties on *DAC*, |*DAC*|, and *DDAC* remains positive, indicating that it is not significantly influenced by *REM*.

Fourth, we use alternative proxies of financial reporting quality that could provide evidence on firms' audit quality. We use conservatism as an alternative measure for audit

quality (Ball & Shivakumar, 2005). In line with the strategy adopted by Khan and Watts (2009), we use a firm-year level conservatism measure (*C-Score*), whereby a higher *C-Score* implies higher financial reporting quality and audit quality. The negatively significant coefficient of *Social Ties* for *C-Score* in Panel D of Table 10 shows that client firms with socially connected signatory auditors exhibit lower financial reporting conservatism (indicating lower audit quality) than firms without socially bonded auditors, thus supporting our main findings. We further adopt *Irregularity* as a proxy for financial reporting quality and include it in our model as a dummy variable coded as 1 if the audit firm is sanctioned by the CSRC and/or MOF due to its failure to report the client firm's accounting frauds or irregularities and 0 otherwise. The positively significant coefficient of *Social Ties* for *Irregularity* in Panel D of Table 10 shows that audit firms with socially connected signatory auditors have a higher propensity to fail to report accounting fraud.

Fifth, to extend our firm value analysis presented in Table 5, we further investigate whether our finding of the negative impact of social ties on firm valuation (proxied by *Tobin's Q*) also holds for other firm value measures, such as *ROA, P/E ratio* and *P/B ratio*. In Panel E of Table 10, the coefficients across these firm value proxies are all statistically negative, revealing that our client firms with social-tie auditors have lower firm value. In addition, we also check for other market-based measures, such as *CofE*, *CofD*, and *Bond Rating*. As seen in Panel F of Table 10, the link between *CofE* and *Social Ties* has a statistically positive coefficient, indicating higher expected risks perceived by the equity holders. Moreover, the coefficients of *Social Ties* are positive and statistically significant for *CofD* and negative and statistically significant for *Bond Rating*, implying that client firms with socially connected auditors could convey a negative impact to the debt market.

Sixth, we investigate whether our findings are caused by exogenous shocks, such as the adoption of IFRS standards in 2007. Before 2007, the Chinese GAAP provided more specific

guidelines for firms to follow when preparing financial statements as instructions under the United States GAAP. Since 2007, China's Ministry of Finance has amended the Accounting Standards for Business Enterprises, aligning them more closely with International Financial Reporting Standards (IFRS) and the International Auditing and Assurance Standards (IAAS). As a result, under IFRS-based reporting rules, there are more instances of judgements and more leeway for auditors to exercise discretionary judgements (Chen et al., 2020), which can influence the audit process. To test for this potential effect, we partition the sample into pre-IFRS and post-IFRS subsamples and subject them to the *DAC* and *Opinion* models separately. As seen in Panel G of Table 10, the coefficients of *Social Ties* are statistically significant in both subsamples, confirming that our main findings are robust to such exogenous shocks.

Seventh, He et al. (2021) and Koh et al. (2023) provide evidence that the diversity of signing auditors' personal characteristics leads to higher audit quality, as such heterogeneity facilitates team performance. To check the effect of audit team diversity on audit quality, we control for the audit team diversity documented by He et al. (2021) and Koh et al. (2023), including *Div_Gender*, *Div_Age*, *Div_Major*, and *Div_Position*, which represent the diversity in signing auditors' personal characteristics (gender, age, major, and position, respectively). As shown in Panel H of Table 10, the coefficients of our main variable *Social Ties* across the three models are statistically significant after controlling for audit team diversity.

Lastly, we perform replication tests to check whether our measures are comparable to those in prior studies. We first compare the means of *AC Tie* and *MGT Tie* to these two variables in He et al. (2017) and Guan et al. (2016) and find that they are comparable. Furthermore, we perform additional tests (untabulated) by controlling for the same control variables measurement as these two studies. The empirical results of these two studies are replicable and our coefficients are similar to theirs conditional on the same control variables. We also perform separate regressions for SOEs and non-

SOEs by using Huang et al.'s (2021) social ties measure and ours. Untabulated findings reveal that SOEs may not exert a significant impact on the social tie–audit quality relation in our study. However, SOEs could exert a significant impact on Huang et al.'s (2021) measure (coworking experience). Huang et al. (2021) use the setting of the Taiwan market, where institutional ownership by government is rare, and most firms are non-SOEs. Therefore, it is not surprising to find contradictory results in the study of Huang et al. (2021). To some extent, the differences of institutional ownership between mainland China and Taiwan market explain the divergence between their results and ours.

[Insert Table 10 about here]

7 Conclusion

Although social ties play a crucial role in shaping audit outcomes, this issue has rarely been explored at the audit team level due to the limited availability of pertinent data. By obtaining and analysing unique signatory auditors' demographic information in China, this study fills this gap in the literature.

We extend the existing body of research by focusing on the effects of informal institutional culture on auditor performance and demonstrate that the two signatory auditors' social ties influence audit outcomes. When examining their influence, we consider two competing scenarios, as social ties can promote information sharing, collaboration and advice-seeking between two signing auditors, which would in turn enhance audit quality. However, social ties also lead to collusion through favouritism and blind obedience between two signing auditors, thus, undermine audit quality. Evidence obtained by analysing the Chinese data spanning the 2004−2018 period shows that the two auditors' social ties impair audit quality, measured by discretionary accruals, issuance of a favourable opinion, accounting fraud irregularity, and less reporting conservatism. This negative effect indicates that social ties are

more likely to promote collusive alliances and thus impair audit independence and audit quality in the Chinese setting.

Our analyses also reveal that the negative relationship between the two auditors' social ties and audit outcomes varies with both auditor and audit firm characteristics. This negative effect is alleviated if the two signatory auditors have attended elite schools or worked for one of the Big 4 auditing firms. However, the negative effect of social ties between the two signatory auditors is more pronounced if they are partners or their audit firm committed a financial misrepresentation and has been sanctioned by regulators. These findings offer further insight into the effects of auditor and audit firm characteristics on audit quality. Furthermore, social ties between the two auditors significantly decrease firm value through impaired market confidence, while this negative relationship can be partially explained by impaired audit quality. Overall, our findings are robust to various checks (change analysis, three-stage least squares approach, Heckman two-stage approach, alternative variable measures and excluding exogenous factors).

Our study has some important practical implications. Specifically, we elucidate the influence of the two auditors' social ties on audit independence and audit quality, thus motivating regulators and managers to pay attention to the informal relationships among auditors, as these may impact their professional conduct.

Our study also has important policy implications, as the need for greater oversight and monitoring of audit team assignment and composition is increasingly being recognised by Chinese authorities (CICPA, 2020, No. 5101). Our findings will aid regulators in prescribing audit quality assurance rules and monitoring audit quality by considering the personnel composition and formation of audit groups. They may also be of help to policy-makers in China who are improving their policies and regulations on disclosure of individual auditors' personal information. **Our findings may be applicable to relationship-based economies such as some**

Asian counties (regions). It remains to be tested whether they can be generalised to other countries (regions). Both cases present opportunities for future research.

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Table 1
Sample Distribution

Panel A Distribution of all client firm observations

Year	Client firm with socially connected auditors	Client firm without socially connected auditors	Total client firm	Percentage
2004	128	173	301	42.5%
2005	90	131	221	40.7%
2006	159	191	350	45.4%
2007	190	217	407	46.7%
2008	223	257	480	46.5%
2009	190	301	491	38.7%
2010	238	361	599	39.7%
2011	278	465	743	37.4%
2012	346	585	931	37.2%
2013	363	660	1023	35.5%
2014	340	682	1022	33.3%
2015	361	721	1082	33.4%
2016	381	797	1178	32.3%
2017	401	761	1162	34.5%
2018	424	939	1363	31.1%
Total client firm observations	4112	7241	11353	36.2%

Panel B Types of social tie in social-tie client firm observations

Year	School Tie	Region Tie	Employment Tie	Total social ties
2004	20	65	59	144
2005	17	42	42	101
2006	35	74	77	186
2007	37	76	97	210
2008	38	104	112	254
2009	42	89	83	214
2010	47	131	82	260
2011	43	160	100	303
2012	62	184	125	371
2013	57	226	113	396
2014	58	214	95	367
2015	59	215	114	388
2016	52	243	114	409
2017	45	258	130	433
2018	50	281	117	448
Total social ties	662	2362	1460	4484
Percentage	14.76%	52.68%	32.56%	100%

Notes: Panel A shows a time-series distribution of our whole client firm observations from 2004 to 2018. We partition client firms into those that have socially connected auditors and those that do not. Panel B shows the

time-series distribution of the observations categorized by three types of social ties among our social-tie client firm observations: school tie, region tie and employment tie. *School Tie* = 1 if the two signatory auditors are graduated from the same university. *Region Tie* =1 if the two signatory auditors have attended schools or universities in the same province or city. *Employment Tie* =1 if the two signatory auditors have audited the same client or have been appointed as independent director in the same company.

Table 2
Summary Statistics

Variable	N	Mean	Std.Dev.	Min	25%	Median	75%	Max
Independent variables								
Social Ties	11353	0.395	0.668	0.000	0.000	0.000	1.000	3.000
School Tie	11353	0.058	0.234	0.000	0.000	0.000	0.000	1.000
Region Tie	11353	0.208	0.442	0.000	0.000	0.000	0.000	1.000
Employment Tie	11353	0.129	0.335	0.000	0.000	0.000	0.000	1.000
AC Tie	11353	0.137	0.355	0.000	0.000	0.000	0.000	1.000
MGT Tie	11353	0.132	0.223	0.000	0.000	0.000	0.000	1.000
Dependent variables								
DAC	11353	0.009	0.118	-0.408	-0.036	0.011	0.070	0.376
DDAC	11353	0.000	0.115	-0.470	-0.051	-0.007	0.039	0.342
Irregularity	11353	0.024	0.154	0.000	0.000	0.000	0.000	1.000
Opinion	11353	0.941	0.155	0.000	1.000	1.000	1.000	1.000
Tobin's Q	11353	1.964	1.203	0.887	1.195	1.560	2.264	8.137
REM	10599	-0.007	0.203	-0.689	-0.101	0.006	0.104	0.615
C-Score	10066	-0.159	1.423	-11.150	-0.075	0.000	0.097	0.365
Control variables								
ROA	11353	0.044	0.052	-0.148	0.016	0.038	0.069	0.218
REC	11353	0.109	0.099	0.000	0.028	0.085	0.163	0.453
INV	11353	0.160	0.146	0.000	0.064	0.122	0.201	0.716
LEV	11353	0.447	0.204	0.051	0.287	0.450	0.604	0.921
LIQ	11353	2.275	2.514	0.291	1.058	1.514	2.409	17.814
SIZE	11353	22.169	1.295	19.756	21.251	21.976	22.866	27.149
LOSS	11353	0.072	0.259	0.000	0.000	0.000	0.000	1.000
GROWTH	11353	0.176	0.360	-0.342	0.015	0.094	0.220	3.229
MB	11353	3.445	2.770	0.643	1.673	2.634	4.246	19.602
SOE	11353	0.493	0.500	0.000	0.000	0.000	1.000	1.000
CFO	11353	0.055	0.087	-0.259	0.010	0.053	0.100	0.348
BIG4	11353	0.061	0.240	0.000	0.000	0.000	0.000	1.000
TOP10	11353	0.029	0.167	0.000	0.000	0.000	0.000	1.000
CoworkYear	11353	4.608	1.932	1.000	2.000	3.000	5.000	9.000
Tenure_AF	11353	6.642	3.779	1.000	3.000	6.000	10.000	12.000
Tenure_Aud	11353	3.262	2.740	1.000	1.000	2.000	4.000	18.000
Expert_AF	11353	0.063	0.243	0.000	0.000	0.000	0.000	1.000
Expert_Aud	11353	0.013	0.115	0.000	0.000	0.000	0.000	1.000
Beta Risk	11353	1.096	0.262	0.026	0.938	1.097	1.244	1.682
Director_Num	11353	10.121	2.169	5.000	9.000	10.000	12.000	17.000
Duality	11353	0.219	0.414	0.000	0.000	0.000	0.000	1.000

Notes: This table presents summary statistics for the variables. See the Appendix for variables definitions. All continuous variables are winsorized at the bottom and top 1% to avoid the effects of outliers.

Table 3
Two signatory auditor social ties and audit quality

	DAC	DAC	Opinion	Opinion
	(1)	(2)	(3)	(4)
Social Ties	0.005***	0.005***	0.116**	0.112**
	(3.22)	(3.05)	(1.99)	(1.97)
ROA	1.096***	1.093***	3.374***	3.434***
	(34.70)	(34.57)	(3.77)	(3.82)
REC	-0.034***	-0.033***	-0.276	-0.301
	(-2.67)	(-2.62)	(-0.62)	(-0.67)
INV	-0.031***	-0.031***	1.475***	1.452***
	(-2.90)	(-2.99)	(2.92)	(2.89)
LEV	0.001	0.000	-1.532***	-1.488***
	(0.18)	(0.00)	(-4.74)	(-4.69)
LIQ	-0.000	-0.000	-0.005	-0.004
	(-1.09)	(-1.23)	(-0.72)	(-0.63)
SIZE	0.003***	0.003***	0.174***	0.177***
	(2.65)	(3.01)	(2.90)	(2.92)
LOSS	0.018***	0.018***	-0.395***	-0.397***
	(3.43)	(3.41)	(-2.95)	(-2.93)
GROWTH	0.004***	0.004***	0.588***	0.583***
	(25.28)	(25.34)	(3.17)	(3.13)
CFO	-0.901***	-0.900***	0.090	0.069
	(-43.58)	(-43.48)	(0.17)	(0.13)
SOE	0.004*	0.004*	0.328***	0.326***
	(1.74)	(1.78)	(3.02)	(3.03)
MB	-0.000	-0.000	-0.002	-0.002
	(-0.52)	(-0.50)	(-0.80)	(-0.83)
BIG4		-0.008*		-0.985**
		(-1.88)		(-2.06)
TOP10		0.008*		-2.553***
		(1.75)		(-4.71)
CoworkYear		0.001**		-0.025
		(2.27)		(-1.49)
Tenure_AF		-0.000		0.008
		(-1.50)		(0.89)
Tenure_Aud		-0.000		0.004
		(-0.70)		(0.15)
Expert_AF		0.003		-0.139
		(0.70)		(-0.83)
Expert_Aud		-0.003		0.554
		(-0.71)		(1.23)
_cons	-0.143*	-0.156**	-2.248	-2.279
	(-1.87)	(-2.26)	(-1.60)	(-1.64)
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.487	0.489		
pseudo R^2			0.294	0.296
N	11353	11353	11353	11353

Notes: Table 3 reports the regression results of Equation (1), regarding the effect of social ties on audit quality. *Social Ties* is an aggregate based on measures of *School Tie, Employment Tie* and *Region Tie*. Its value ranges from zero to three. Columns (1) and (2) report the results of *DAC*, using OLS regression models. Columns (3) and (4) report the results of *Opinion*, estimated by probit regression models. In Columns (2) and (4), we include these two social tie measures in our model. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and computed using robust standard errors, clustered by client firm. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 4
Moderating effects

Panel A Abnormal discretionary accruals model

	DAC (1)	DAC (2)	DAC (3)	DAC (4)
Social Ties*Partner	0.017***			
	(3.49)			
School Tie*Elite School		-0.014*		
		(-1.87)		
Social Ties*BIG4			-0.047***	
			(-2.60)	
Social Ties*Irregularity				0.077**
				(2.03)
Social Ties	0.004**		0.005**	0.004*
	(2.01)		(2.56)	(1.91)
Partner	0.002			
	(1.03)			
School Tie		0.015***		
		(2.99)		
Elite School		-0.004		
		(-0.36)		
BIG4			-0.007	
			(-1.15)	
Irregularity				-0.019*
				(-1.95)
Controls	YES	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.489	0.489	0.489	0.489
N	11353	11353	11353	11353

Panel B Audit opinion model

	Opinion (1)	Opinion (2)	Opinion (3)	Opinion (4)
Social Ties*Partner	0.269			
	(0.95)			
School Tie*Elite School		-2.151*		
		(-1.74)		
Social Ties*BIG4			-0.839*	
			(-1.95)	
Social Ties*Irregularity				0.015*
				(1.89)
Social Ties	0.116**		0.119**	0.118**
	(2.12)		(2.08)	(2.01)
Partner	0.047			
	(0.80)			
School Tie		0.006*		
		(1.93)		
Elite School		-0.243		
		(-0.86)		
BIG4			-0.530	
			(-1.23)	
Irregularity				-0.003
				(-0.12)
Controls	YES	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES	YES
pseudo R^2	0.296	0.296	0.296	0.296

N	11353	11353	11353	11353

Notes: This table shows the effects of the two signatory auditors social ties on audit quality conditional on the auditor level characteristics and audit firm-level characteristics. Panel A presents the results for *DAC* model and Panel B shows the results for *Opinion* model. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 5
Two signatory auditor social ties and firm value

Panel A Path analysis

	Coefficient	t-statistic
DAC as mediator		
Direct path		
p (*Social Ties, Tobin's Q*) =β_1	-0.063***	-3.12
Mediated path for DAC		
p (*Social Ties, DAC*) =γ_1	0.005***	3.05
p (*DAC, Tobin's Q*) = β_2	-0.448***	-4.32
Total mediated path for DAC (= $\gamma_1 \times \beta_2$)	-0.002*	-1.70
Proportion of total effect that is mediated	0.031	
Opinion as mediator		
Direct path		
p (*Social Ties, Tobin's Q*) =β_1	-0.062***	-3.06
Mediated path for Opinion		
p (*Social Ties, Opinion*) = δ_1	0.112**	1.97
p (*Opinion, Tobin's Q*) = β_3	-0.214***	-5.51
Total mediated path for Opinion (=$\delta_1 \times \beta_3$)	-0.024**	-2.11
Proportion of total effect that is mediated	0.279	
Controls	YES	
Year, Client firm, Audit firm FE	YES	
N	11353	

Panel B The SEM regression results

	DAC	Tobin's Q	Opinion	Tobin's Q
	(1)	(2)	(3)	(4)
Social Ties	0.005***	-0.063***	0.112**	-0.062***
	(3.05)	(-3.12)	(1.97)	(-3.06)
DAC		-0.448***		
		(-4.32)		
Opinion				-0.214***
				(-5.51)
ROA	1.093***	4.230***	3.434***	3.895***
	(34.57)	(12.94)	(3.82)	(12.69)
REC	-0.033***	0.243*	-0.301	0.302**
	(-2.62)	(1.73)	(-0.67)	(2.16)
INV	-0.031***	-0.162*	1.452***	-0.092
	(-2.99)	(-1.65)	(2.89)	(-0.96)
LEV	0.000	-0.766***	-1.488***	-0.767***
	(0.00)	(-8.10)	(-4.69)	(-8.15)
LIQ	-0.000	0.015***	-0.004	0.015***
	(-1.23)	(3.39)	(-0.63)	(3.45)
SIZE	0.003***	-0.306***	0.177***	-0.303***
	(3.01)	(-22.91)	(2.92)	(-22.70)
LOSS	0.018***	0.610***	-0.397***	0.574***
	(3.41)	(10.04)	(-2.93)	(9.46)
Growth	0.004***	0.435***	0.583***	0.434***
	(25.34)	(494.45)	(3.13)	(552.42)

CFO	-0.900***	-0.390**	0.069	-0.009
	(-43.48)	(-2.15)	(0.13)	(-0.06)
SOE	0.004*	0.024	0.326***	0.033
	(1.78)	(0.82)	(3.03)	(1.13)
MB	-0.000	0.016***	-0.002	0.016***
	(-0.50)	(20.41)	(-0.83)	(19.95)
Big4	-0.008*	0.238***	-0.985**	0.245***
	(-1.88)	(3.92)	(-2.06)	(4.03)
Top10	0.008*	0.265***	-2.553***	0.264***
	(1.75)	(3.40)	(-4.71)	(3.40)
coworkyear	0.001**	0.009*	-0.025	0.008
	(2.27)	(1.75)	(-1.49)	(1.64)
Tenure_AF	-0.000	0.013***	0.008	0.014***
	(-1.50)	(5.09)	(0.89)	(5.24)
Tenure_Aud	-0.000	0.034***	0.004	0.035***
	(-0.70)	(4.60)	(0.15)	(4.71)
Expert_AF	0.003	-0.136**	-0.139	-0.149***
	(0.70)	(-2.36)	(-0.83)	(-2.59)
Expert_Aud	-0.003	0.183	0.554	0.181
	(-0.71)	(1.51)	(1.23)	(1.50)
Beta		0.086*		0.108**
		(1.68)		(2.11)
Director_Num		0.013**		0.012**
		(2.39)		(2.26)
Duality		0.055		0.059*
		(1.64)		(1.77)
_cons	-0.156**	8.250***	-2.279	9.254***
	(-2.26)	(29.07)	(-1.64)	(27.71)
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.489	0.466		0.466
pseudo R^2			0.296	
N	11353	11353	11353	11353

Notes: This table presents the linkage among social ties, audit quality and firm valuation. Panel A reports the relation between social ties and firm value, using path analysis. Panel B reports the results estimated using the structural equation modeling (SEM) technique. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 6
Different types of social ties and audit quality

	DAC	Opinion	Tobin's Q	Tobin's Q
	(1)	(2)	(3)	(4)
School Tie	0.011***	0.006*	-0.203***	-0.200***
	(2.97)	(1.92)	(-3.59)	(-3.54)
Region Tie	0.004*	0.014**	-0.141**	-0.135**
	(1.75)	(2.46)	(-2.05)	(-1.97)
Employment Tie	0.010***	0.006***	-0.130**	-0.122**
	(2.64)	(3.68)	(-2.13)	(-2.00)
DAC			-0.441***	
			(-4.23)	
Opinion				-0.187***
				(-4.88)
ROA	1.094***	3.217***	3.253***	3.418***
	(34.64)	(5.44)	(10.74)	(11.22)
REC	-0.033***	-0.353	-0.324*	-0.328**
	(-2.60)	(-0.96)	(-1.95)	(-1.97)
INV	-0.031***	1.259***	-0.480***	-0.459***
	(-2.99)	(3.93)	(-3.76)	(-3.60)
LEV	-0.000	-1.116***	-0.509***	-0.520***
	(-0.04)	(-4.89)	(-5.23)	(-5.34)
LIQ	-0.000	0.001	0.011***	0.011**
	(-1.26)	(0.05)	(2.58)	(2.54)
SIZE	0.004***	0.132***	-0.308***	-0.305***
	(3.09)	(3.51)	(-22.48)	(-22.26)
LOSS	0.018***	-0.352***	0.524***	0.508***
	(3.43)	(-3.21)	(8.76)	(8.48)
Big4	-0.009*	0.127	0.268***	0.266***
	(-1.92)	(0.64)	(4.43)	(4.40)
Top10	0.008*	0.540	0.274***	0.278***
	(1.79)	(1.26)	(3.57)	(3.63)
Growth	0.004***	0.631***	0.434***	0.434***
	(25.36)	(3.24)	(560.62)	(561.29)
CFO	-0.901***	0.157	-0.014	-0.026
	(-43.61)	(0.40)	(-0.09)	(-0.17)
SOE	0.004*	0.292***	0.029	0.036
	(1.78)	(3.70)	(0.98)	(1.22)
MB	-0.000	-0.002	0.016***	0.015***
	(-0.48)	(-1.19)	(19.91)	(19.53)
CoworkYear	0.001**	-0.015	0.011**	0.011**
	(2.05)	(-1.32)	(2.30)	(2.22)
Tenure_AF	-0.000	0.009	0.013***	0.013***
	(-1.50)	(1.34)	(5.10)	(5.16)
Tenure_Aud	-0.000	0.014	0.029***	0.030***
	(-0.62)	(0.72)	(3.97)	(4.06)
Expert_AF	0.003	-0.107	-0.158***	-0.160***
	(0.64)	(-0.71)	(-2.65)	(-2.69)
Expert_Aud	-0.004	0.522	0.072	0.079
	(-0.83)	(1.21)	(0.60)	(0.66)
Beta Risk			0.091*	0.100*
			(1.73)	(1.91)
Director_Num			0.011**	0.010*
			(2.05)	(1.90)
Duality			0.040	0.041
			(1.21)	(1.25)
_cons	-0.058**	-1.573*	8.383***	9.228***
	(-2.34)	(-1.93)	(28.30)	(26.91)

Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.487		0.467	0.467
pseudo R^2		0.296		
N	11353	11353	11353	11353

Notes: This table shows the results of including all underlying types of social ties in the regression models (*DAC, Opinion* and *Tobin's Q*). Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 7
Change analysis

	ΔDAC	ΔOpinion	ΔTobin's Q	ΔTobin's Q
	(1)	(2)	(3)	(4)
ΔSocial Ties	0.017**	0.095*	-0.124*	-0.123*
	(2.26)	(1.82)	(-1.82)	(-1.82)
ΔDAC			-0.236	
			(-1.63)	
ΔOpinion				-0.228*
				(-1.70)
ΔROA	0.980***	2.844***	1.548***	1.425***
	(9.51)	(4.90)	(2.75)	(2.67)
ΔREC	0.014	-0.940	0.016	-0.024
	(0.36)	(-1.38)	(0.04)	(-0.07)
ΔINV	-0.008	0.217	-0.134	-0.126
	(-0.34)	(0.47)	(-0.37)	(-0.35)
ΔLEV	-0.011	-0.260	-0.017	-0.021
	(-0.55)	(-0.82)	(-0.06)	(-0.07)
ΔLIQ	0.000	-0.003	-0.004	-0.004
	(0.59)	(-0.20)	(-0.57)	(-0.58)
ΔSIZE	-0.007**	0.029	0.006	0.007
	(-2.14)	(0.50)	(0.14)	(0.18)
ΔLOSS	0.018*	-0.006	0.101**	0.095*
	(1.87)	(-0.05)	(1.97)	(1.86)
ΔGROWTH	0.010***	-0.025	0.200***	0.198***
	(4.70)	(-0.46)	(7.94)	(7.66)
ΔCFO	-0.919***	-0.135	-0.073	0.146
	(-28.71)	(-0.41)	(-0.31)	(0.77)
ΔSOE	0.007	-0.009	-0.030	-0.035
	(0.65)	(-0.04)	(-0.33)	(-0.39)
ΔMB	0.000*	-0.007*	-0.005	-0.005
	(1.89)	(-1.65)	(-0.96)	(-0.97)
ΔBIG4	0.008	0.252	0.073	0.077
	(1.00)	(0.94)	(0.93)	(0.98)
ΔTOP10	0.013	-0.192	0.129**	0.121**
	(1.38)	(-1.04)	(2.46)	(2.29)
ΔCoworkYear	0.002*	0.015	0.003	0.003
	(1.89)	(1.21)	(0.49)	(0.52)
ΔTenure_AF	-0.001**	0.013	0.008**	0.009**
	(-2.06)	(1.43)	(2.07)	(2.21)
ΔTenure_Aud	0.001	-0.017	0.024***	0.023***
	(0.53)	(-0.80)	(3.20)	(3.18)
ΔExpert_AF	-0.002	-0.213	-0.059*	-0.063*
	(-0.36)	(-1.45)	(-1.67)	(-1.78)
ΔExpert_Aud	-0.002	0.198	0.070	0.076
	(-0.35)	(0.75)	(0.75)	(0.81)
ΔBeta Risk			0.208***	0.209***
			(3.87)	(3.89)
ΔDirector_Num			-0.010	-0.010
			(-1.15)	(-1.14)
ΔDuality			0.005	0.014
			(0.09)	(0.22)
_cons	0.001	2.174***	2.009***	3.138***
	(0.51)	(52.44)	(60.63)	(4.67)
adj. R^2	0.281	0.210	0.260	0.261
N	11353	11353	11353	11353

Notes: We modify Equations (1), (5) and (7) and replace all variables, with changes in them between year *t-1* and *t*, denoted by adding a prefix Δ. We construct Δ *Social Ties* to capture the year-to-year change in all three sources of social ties, where *Social Ties* is the aggregated value of *School Tie, Region Tie* and *Employment Tie.* Δ *Social Ties* is the change in *Social Ties* from year *t-1* and *t.* The dependent variables across Columns (1)-(4) are change values in audit quality and firm value (*DAC, Opinion and Tobin's Q*) from year *t-1* and *t*, denoted by adding a prefix Δ. The numbers in parentheses are t-statistics and robust standard errors are clustered at client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 8 Three-stage least squares approach

	DAC model		Opinion model		Tobin's Q model		
	Social Ties	DAC	Social Ties	Opinion	Social Ties	Tobin's Q	Tobin's Q
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
IV_Social Ties	0.724***		0.725***		0.713***		
	(22.17)		(22.20)		(19.67)		
Fitted Social Ties		0.020**		0.119**		-0.416***	-0.402***
		(2.22)		(2.11)		(-2.81)	(-2.72)
ROA	-0.001	1.121***	0.049	3.252***	0.139	4.284***	3.965***
	(-0.01)	(41.89)	(0.37)	(5.49)	(0.85)	(12.87)	(12.67)
REC	0.022	-0.116***	0.016	-0.309	0.006	0.248*	0.304**
	(0.34)	(-8.94)	(0.24)	(-0.84)	(0.09)	(1.73)	(2.14)
INV	-0.076*	-0.035***	-0.066	1.227***	-0.054	-0.187*	-0.111
	(-1.66)	(-3.77)	(-1.46)	(3.83)	(-1.14)	(-1.88)	(-1.14)
LEV	0.010	0.013	0.017	-1.103***	0.041	-0.747***	-0.745***
	(0.23)	(1.46)	(0.39)	(-4.84)	(0.88)	(-7.77)	(-7.78)
LIQ	-0.002	-0.000	-0.002	0.000	-0.001	0.014***	0.014***
	(-0.94)	(-0.81)	(-0.86)	(0.01)	(-0.36)	(3.05)	(3.14)
SIZE	-0.015**	0.004***	-0.014**	0.131***	-0.018***	-0.315***	-0.312***
	(-2.34)	(3.28)	(-2.28)	(3.50)	(-2.64)	(-22.69)	(-22.48)
LOSS	0.000	0.019***	0.001	-0.345***	0.014	0.615***	0.577***
	(0.00)	(3.38)	(0.02)	(-3.15)	(0.47)	(9.96)	(9.38)
Big4	0.018	-0.008	0.019	0.152	0.022	0.229***	0.236***
	(0.62)	(-1.28)	(0.65)	(0.76)	(0.71)	(3.69)	(3.82)
Top10	-0.000	0.009	-0.002	0.586	0.000	0.261***	0.259***
	(-0.01)	(1.23)	(-0.06)	(1.34)	(0.01)	(3.29)	(3.28)
Growth	-0.000	0.004***	0.000	0.611***	0.005**	0.435***	0.434***
	(-0.12)	(48.40)	(0.75)	(3.16)	(2.40)	(487.21)	(544.23)
CFO	-0.053	-0.892***	-0.133*	0.153	0.010	-0.368**	-0.015
	(-0.65)	(-61.73)	(-1.87)	(0.39)	(0.11)	(-2.00)	(-0.10)
SOE	-0.001	0.005**	-0.001	0.275***	-0.004	0.025	0.034
	(-0.08)	(1.98)	(-0.09)	(3.50)	(-0.29)	(0.85)	(1.16)
MB	-0.001	-0.000	-0.001	-0.002	-0.000	0.016***	0.016***
	(-1.37)	(-0.48)	(-1.26)	(-1.28)	(-0.81)	(19.79)	(19.39)
CoworkYear	0.017***	0.001	0.018***	-0.017	0.018***	0.014**	0.013**
	(7.61)	(1.55)	(7.74)	(-1.47)	(7.45)	(2.53)	(2.41)
Tenure_AF	0.002*	-0.000	0.002*	0.010	0.003**	0.015***	0.015***
	(1.84)	(-0.66)	(1.85)	(1.38)	(2.20)	(5.43)	(5.56)
Tenure_Aud	-0.005	-0.000	-0.005	0.013	-0.004	0.031***	0.032***
	(-1.44)	(-0.15)	(-1.51)	(0.68)	(-1.09)	(4.07)	(4.18)
Expert_AF	0.018	0.003	0.018	-0.106	-0.002	-0.123**	-0.137**
	(0.66)	(0.56)	(0.67)	(-0.70)	(-0.07)	(-2.08)	(-2.33)
Expert_Aud	0.139***	0.000	0.135**	0.524	0.119**	0.234*	0.229*
	(2.59)	(0.04)	(2.51)	(1.24)	(1.97)	(1.87)	(1.84)
Beta Risk					0.029	0.092*	0.114**
					(1.14)	(1.76)	(2.17)
Director_Num					-0.001	0.012**	0.012**
					(-0.27)	(2.25)	(2.15)
Duality					-0.021	0.047	0.051
					(-1.26)	(1.38)	(1.50)
DAC	0.086*					-0.416***	
	(1.85)					(-3.94)	
Opinion			0.034*				-0.203***
			(1.93)				(-5.12)
Tobin's Q					-0.012**		
					(-2.44)		
City_Dummy		-0.014	-0.157			0.232	0.226
		(-0.96)	(-0.44)			(1.56)	(1.52)

_cons	0.358***	-0.179***	0.206	-1.754**	0.434***	8.563***	9.511***
	(2.67)	(-2.82)	(1.32)	(-2.14)	(2.86)	(27.85)	(27.16)
Year, Client firm, Audit firm FE	YES	YES	YES	YES	YES	YES	YES
adj. R^2	0.053	0.492	0.053	0.294	0.051	0.477	0.477
N	11353	11353	11353	11353	11353	11353	11353

Notes: This table presents 3SLS regression results on the impact of social ties on audit quality and firm value. The instrumental variable *IV_Social Ties* is the average social ties between the review auditor and all other potential engagement auditors (excluding the actual engagement auditor) of the same audit firm in the respective year. The results for the first-stage of 3SLS are presented in Columns (1), (3) and (5) for audit quality and firm value models. Columns (2), (4), (6) and (7) present the results for the third-stage of 3SLS across *DAC, Opinion* and *Tobin's Q*. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at the client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 9
Heckman two-stage procedure

Panel A Selection model

	Social Ties
	(1)
ROA	0.242
	(1.06)
REC	-0.033
	(-0.26)
INV	-0.099
	(-1.10)
LEV	0.116
	(1.35)
LIQ	-0.005
	(-1.37)
SIZE	-0.056***
	(-4.40)
Growth	0.001
	(0.87)
CFO	-0.240*
	(-1.72)
SOE	0.047*
	(1.80)
MB	-0.006**
	(-2.16)
Big4	-0.148**
	(-2.50)
Top10	-0.068
	(-0.91)
coworkyear	0.020***
	(4.41)
Tenure_AF	0.007***
	(2.84)
Tenure_Aud	-0.028***
	(-4.23)
Expert_AF	0.098*
	(1.85)
Expert_Aud	0.187*
	(1.80)
IV_Social Ties	0.245***
	(4.56)
_cons	0.837***
	(3.13)
City FE	YES
Year, Client firm, Audit firm FE	YES
pseudo R^2	0.010
N	11353

Panel B Audit quality and firm value model including IMR

	DAC	Opinion	Tobin's Q	Tobin's Q
	(1)	(2)	(3)	(4)
Social Ties	0.004***	0.112**	-0.041**	-0.042**
	(2.87)	(1.97)	(-2.17)	(-2.21)
DAC			-0.529***	
			(-5.24)	
Opinion				-0.107***
				(-2.92)
ROA	1.136***	4.725***	11.784***	12.151***

	(17.75)	(5.85)	(19.88)	(20.69)
REC	-0.117***	-0.430	3.517***	3.506***
	(-8.37)	(-1.16)	(17.41)	(17.32)
INV	-0.041*	0.563	5.583***	5.568***
	(-1.66)	(1.39)	(24.13)	(24.02)
LEV	0.020	-0.202	-10.491***	-10.425***
	(0.81)	(-0.50)	(-31.19)	(-30.90)
LIQ	-0.001	-0.023	0.111***	0.110***
	(-0.61)	(-1.41)	(21.28)	(21.07)
SIZE	0.001	-0.237*	2.532***	2.510***
	(0.07)	(-1.68)	(27.28)	(26.96)
LOSS	0.019***	-0.348***	0.398***	0.382***
	(3.17)	(-3.16)	(6.96)	(6.66)
Growth	0.004***	0.614***	8.266***	8.208***
	(22.56)	(3.20)	(31.11)	(30.77)
CFO	-0.905***	-1.366**	3.836***	3.807***
	(-17.19)	(-1.99)	(28.15)	(27.86)
SOE	0.008	0.553***	0.397***	0.395***
	(0.83)	(4.37)	(263.65)	(270.49)
MB	-0.000	-0.047***	3.669***	4.116***
	(-0.28)	(-2.80)	(16.75)	(20.66)
Big4	-0.015	-0.711*	-0.995***	-0.984***
	(-0.52)	(-1.95)	(-22.77)	(-22.40)
Top10	0.005	0.086	0.371***	0.368***
	(0.33)	(0.19)	(32.16)	(31.78)
coworkyear	0.002	0.105**	-1.053***	-1.045***
	(0.52)	(2.28)	(-30.28)	(-29.95)
Tenure_AF	0.000	0.049***	-0.377***	-0.373***
	(0.16)	(2.99)	(-29.29)	(-28.93)
Tenure_Aud	-0.002	-0.155**	1.648***	1.636***
	(-0.31)	(-2.40)	(31.16)	(30.82)
Expert_AF	0.009	0.535*	-4.359***	-4.329***
	(0.43)	(1.94)	(-29.60)	(-29.31)
Expert_Aud	0.013	1.700***	-10.041***	-9.957***
	(0.33)	(2.81)	(-28.97)	(-28.63)
Beta			-1.908***	-1.882***
			(-23.33)	(-22.93)
Director_Num			0.423***	0.419***
			(29.67)	(29.29)
Duality			2.414***	2.398***
			(29.06)	(28.77)
IMR	0.073	-0.018	0.010	0.014
	(0.25)	(-0.09)	(0.20)	(0.22)
_cons	-0.174**	-2.811***	22.746***	23.130***
	(-2.31)	(-3.60)	(41.72)	(41.20)
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.489		0.466	0.466
pseudo R^2		0.296		
N	11353	11353	11353	11353

Notes: This Table reports the results of the first stage (Panel A) the second stage (Panel B) of the Heckman two-stage approach for audit quality and firm value. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at the client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Table 10
Alternative explanations and robustness checks

Panel A Controlling for social ties between client and auditors

	(1) DAC	(2) DAC	(3) Opinion	(4) Opinion
Social Ties		0.004**		0.111**
		(2.55)		(1.96)
AC Tie	0.011***	0.002*	0.726*	0.721*
	(3.31)	(1.75)	(1.75)	(1.70)
MGT Tie	0.004*	0.002	0.674*	0.636
	(1.87)	(0.58)	(1.67)	(1.54)
Controls	YES	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.490	0.490		
pseudo R^2			0.295	0.296
N	11353	11353	11353	11353

Panel B Alternative accruals measurement

	|DAC| (1)	DDAC (2)
Social Ties	0.003**	0.180**
	(2.16)	(2.43)
Controls	YES	YES
Year, Client firm, Audit firm FE	YES	YES
adj. R^2	0.222	0.503
N	11353	11353

Panel C Control for real earnings management

	DAC (1)	|DAC| (2)	DDAC (3)
Social Ties	0.004***	0.003**	0.184**
	(2.85)	(2.02)	(2.54)
REM	0.110***	0.025	-0.157*
	(3.80)	(0.66)	(-1.66)
Controls	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES
adj. R^2	0.489	0.222	0.504
N	10589	10589	10589

Panel D Alternative financial reporting quality measurement

	C-Score (1)	Irregularity (2)
Social Ties	-0.038*	0.152***
	(-1.68)	(2.75)
Controls	YES	YES
Year, Client firm, Audit firm FE	YES	YES
adj. R^2	0.103	
pseudo R^2		0.088
N	10066	11353

Panel E Alternative firm performance measures

	ROA (1)	P/E (2)	P/B (3)
Social Ties	-0.001*	-72.555*	-0.381*
	(-1.92)	(-1.72)	(-1.68)
Controls	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES

adj. R^2	0.472	0.504	0.560
N	11353	11353	11353

Panel F Market-based measures

	CofE	CofD	Bond Rating
	(1)	(2)	(3)
Social Ties	0.025*	0.016**	-0.628***
	(1.78)	(2.04)	(-2.99)
Controls	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES
adj. R^2	0.479	0.491	0.456
N	11353	11353	2830

Panel G The effects in the pre-IFRS and post-IFRS period

	DAC	DAC	Opinion	Opinion
	Pre-IFRS	Post-IFRS	Pre-IFRS	Post-IFRS
	(1)	(2)	(3)	(4)
Social Ties	0.006**	0.004***	0.012**	0.111*
	(2.04)	(3.09)	(1.97)	(1.81)
Controls	YES	YES	YES	YES
Year, Client firm, Audit firm FE	YES	YES	YES	YES
adj. R^2	0.429	0.495		
pseudo R^2			0.149	0.294
N	1270	10071	1023	6914

Panel H Excluding the effect of audit team diversity

	(1)	(2)
	DAC	Opinion
Social Ties	0.005**	0.111*
	(3.10)	(1.79)
Div_Gender	0.006	-0.002
	(0.28)	(-0.75)
Div_Age	-0.006**	0.002
	(-2.38)	(0.59)
Div_Major	-0.003	0.001
	(-1.21)	(0.36)
Div_Position	-0.004*	-0.006**
	(-1.75)	(-2.39)
Controls	YES	YES
Year, Client firm, Audit firm FE	YES	YES
adj. R^2	0.490	
pseudo R^2		0.296
N	11353	11353

Notes: This table presents the robustness checks. Panel A reports the regression results of controlling for social ties between auditors and client (top executives or audit committee member). Panel B uses alternative measurement of accruals (|*DAC*| and *DDAC*). Panel C examines the results after controlling for real earnings management in the *DAC,* |*DAC*| and *DDAC* model. Panel D uses alternative financial reporting quality measures (*C-Score* and *Irregularity*). Panel E shows the effects of social ties on alternative firm performance measures (*ROA, P/E ratio* and *P/B ratio*). Panel F shows the effects of social ties on market-based measures (*CofE, CofD* and *Bond Rating*). Panel G displays the results by considering an exogenous shock: IFRS adoption. Panel H presents the results excluding the effect of audit team diversity. Year, client firm and audit firm fixed effects are included in all regressions. The numbers in parentheses are t-statistics and robust standard errors are clustered at the client firm level. ***, ** and * indicate two-tailed statistical significance at 1%, 5% and 10% levels, respectively.

Appendix. Variables definitions

Variables	Definitions
Independent variables	
AC Tie	A dummy variable coded as 1 if one of the Audit Committee members has social ties, formed by *School Tie, Employment Tie* and *Region Tie,* with any of the signatory auditors, and 0 otherwise
Employment Tie	A dummy variable coded as 1 if the two signatory auditors have audited the same client or have been appointed as independent director in the same company, and 0 otherwise
MGT Tie	A dummy variable coded as 1 if one of the client firm's top executives has social ties, formed by *School Tie, Employment Tie* and *Region Tie,* with any of the signatory auditors, and 0 otherwise
Region Tie	A dummy variable coded as 1 if the two signatory auditors have attended colleges or universities in the same province or city, and 0 otherwise
School Tie	A dummy variable coded as 1 if the two signatory auditors have graduated from the same college or university, and 0 otherwise
Social Ties	A dummy variable coded from 0 to 3, calculated as the total count number of types of social ties, including *School Tie, Employment Tie* and *Region Tie* between two signatory auditors
Dependent variables	
C-Score	A firm-year level conservatism introduced by Khan and Watts (2009)
DAC	Discretionary accruals based on the performance-adjusted accrual model (Kothari et al. 2005)
DDAC	Abnormal working capital accruals based on Dechow and Dichev (2002) model.
Opinion	A dummy variable coded as 1 for clean opinions, and 0 otherwise
REM	Real earnings management, calculated by the Roychowdhury (2006) model per industry-year across countries.
Tobin's Q	The ratio of market value of common equity plus the book value of debt divided by total assets. It is industry mean adjusted using the CSRC defined industries.
Control variables	
Beta risk	$Cov(R_i, R_m)/Var(R_m)$, where R_i is the return of $Firm_i$ and R_m is the market return
BIG4	A dummy variable coded as 1 if the client uses one of the international Big-four audit firms, and 0 otherwise
Bond Rating	The bond rating published by CSRC, a grade ranges from 1000 to 840, representing AAA, AA, A, BBB, BB and B.
CFO	The cash flow from operation to year-beginning total assets
CofD	Cost of debt, calculated by weighted-average yield to maturity on the firm's outstanding publicly traded debt. The yield on a debt security is the discount rate that equates the present value of the future cash flows to the security price.
CofE	Cost of equity or required rate of return, calculated by the PEG model designed by Easton (2004)
CoworkYear	The total number of years that the two signatory auditors have collaborated and signed on an audit report
Director_Num	The number of directors on the board
Duality	A dummy variable coded as 1 if the CEO is also the chairman of the board, and 0 otherwise
Elite School	A dummy variable coded as 1 if at least one of the signatory auditors is graduated from the university of "Project-211" or "Project-985", and 0 otherwise
Expert_AF	A dummy variable coded as 1 if an audit firm is an industry specialist, who has the largest client audited assets within an industry-year, and 0 otherwise
Expert_Aud	A dummy variable coded as 1 if either of two signatory auditors is an industry specialist, who has the largest client audited assets within an industry-year, and 0 otherwise
GROWTH	The difference between sales of the current and the prior year divided by prior-year sales
INV	The ratio of inventories to total assets at the year-end
Irregularity	A dummy variable coded as 1 if the audit firm is sanctioned by the CSRC and/or

	MOF due to its failure to report the client firm's accounting frauds or irregularities, and 0 otherwise
LEV	Leverage ratio calculated as total liabilities divided by total assets
LIQ	Liquidity ratio, the ratio of current assets to current liabilities at year-end
LOSS	A dummy variable coded as 1 for firms with negative net income, 0 otherwise
MB	Market-to-book ratio, calculated as the market value of equity divided by book value of equity
P/B ratio	Price-to-book ratio, calculated by a company's share price to its book value per share
P/E ratio	Price-to-earnings ratio, calculated by a company's share price to its earnings per share
Partner	A dummy variable coded as 1 if at least one of the signatory auditors is a partner
REC	The ratio of net accounts receivables to total assets at the year-end, and 0 otherwise
ROA	ROA ratio, calculated as net profit divided by year-beginning total assets
SIZE	Natural logarithm of total assets
SOE	A dummy variable coded as 1 if a firm is owned by the state, and 0 otherwise
Tenure_AF	The number of years that an audit firm has been with the same client firm
Tenure_Aud	The number of years that the two signatory auditors have been with the same client firm
TOP10	A dummy variable coded as 1 if the client uses one of the top-ten domestic audit firms, and 0 otherwise