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The Effect of Networked Clients' Economic Importance on Audit Quality

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SUMMARY: In this study, we examine the association between audit quality and networked clients' economic importance. We consider networks of clients that result from audit committee member-audit partner interlocks. These interlocks occur when an audit committee member of a company is also an audit committee member of other companies that are audited by a common audit firm and audit partner. The audit partner may perceive that future fee income from the network of interlocked companies may be affected by disputes with the management of an interlocked client company. These economic ties have the potential to erode auditor independence and, as a consequence, reduce audit quality. The test variables include measures of network fee dependence based on the audit partner's fees generated from the networked clients created by audit committee member-audit partner interlocks. Audit quality is proxied by the likelihood of issuing a first-time going-concern modified audit report and the absolute value of discretionary accruals. Regressions on unrestricted and propensity score matched samples provide consistent evidence that audit partner dependence on fees from other companies in the network reduce audit quality.

Keywords: audit committee-audit partner interlocks; audit quality; client importance; fee dependence; going-concern opinion; discretionary accruals.

JEL Classifications: G34; M41; M42.

Data Availability: All data used in this paper are publicly available.

INTRODUCTION

Regulators have expressed concerns that an undue dependence on fees from a client at the individual partner, audit office, or audit firm level may have a detrimental effect on auditor independence and audit quality (e.g., Accounting Professional and Ethical Standards Board [APESB] 2013a). Former Securities and Exchange Commission (SEC) Commissioner Steven Wallman (1996, 90) stated that there would be auditor independence concerns "where an office or partner was receiving a material percentage of revenues from a single client or group of clients." The economic dependence that may arise from an audit partner receiving a material percentage of audit fees from a group of clients that are linked has the potential to erode auditor independence and, as a consequence, reduce audit quality (DeAngelo 1981). This issue is still a concern to regulators. For example, in 2013 the Accounting Professional and Ethical Standards Board (APESB) issued an amendment to *APES 110 Code of Ethics for Professional Accountants* because of concerns that auditor independence may be

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compromised because auditors may be receiving multiple referrals from a single source, i.e., a group of clients that are linked in some way by the referring source, such as an audit committee member (APESB 2013a). The technical update that accompanied the amended standard identified this issue as a particular risk in the Self-Managed Superannuation Fund (SMSF) sector and stated that it is likely to be a risk in other sectors, as well (APESB 2013b).[1] Subsequently, the November 2014 newsletter of the Self-managed Independent Superannuation Funds Association (SISFA) contained a warning that an auditor independence threat is created when a large percentage of an SMSF auditor's work comes from one referral source (SISFA 2014).

Prior research has examined the association between individual client importance (economic dependence) and audit quality using audit opinion type and discretionary accruals as proxies for audit quality. Most of that research has studied client importance at the audit firm or audit office level and the results are mixed (Reynolds and Francis 2001; Craswell, Stokes, and Laughton 2002; Chung and Kallapur 2003; Gaver and Paterson 2007; Hunt and Lulseged 2007; Li 2009; Blay and Geiger 2013). In contrast, there has been limited research on the effect of client importance at the audit partner level because the identity of the audit partner is only disclosed in a few jurisdictions (Chen, Sun, and Wu 2010; Chi, Douthett, and Lesic 2012; Goodwin and Wu 2015). The overarching objective of this study is to examine the effects on audit quality of an engagement partner's economic dependence upon a network (group) of linked audit clients.

We examine the association between audit quality and the economic importance of client networks that are created by audit committee member-audit partner interlocks, which occur when an audit committee member of a company is also an audit committee member of other companies that are audited by a common audit firm and engagement audit partner. When an audit partner audits several companies that have audit committee members in common (a confluence of relationships that we describe as a "network"), there is potential for a self-interest threat to auditor independence.[2] The interlocked audit partner may perceive that disputes with the management of a particular client within the network (which we describe as "the focal company") may threaten future fee income from the other companies ("interlocked companies") in the network.[3] These economic ties have the potential to erode auditor independence and, as a consequence, reduce audit quality (DeAngelo 1981). Conversely, audit committee member-audit partner interlocks may create stronger incentives for auditors to increase audit quality to protect their reputation (DeAngelo 1981) due to potential spillover effects to the other companies in the interlocked network. However, no prior research examines whether these interlocking relationships affect audit and financial statement quality.

We focus on the fee dependence and reputational concerns that arise at the audit committee member-audit partner level because the interlocks arising are more likely to affect auditor independence than other interlocks, such as those identified at the audit firm level only, or those involving directors who do not sit on the audit committee.[4] Prior research suggests that members of the audit committee who are interlocked with auditors are likely to have a greater impact on the client's decision making than other parties (such as other directors) potentially involved in interlocking relationships with an auditor (Seabright, Levinthal, and Fichman 1992). We test audit quality at the engagement partner level because the audit engagement partner's clients are more likely to be economically important to the audit engagement partner than to the firm or local office (Chen et al. 2010; Chi et al. 2012). Engagement partners have fewer clients than audit firms; therefore, their wealth is more likely to be economically dependent on the future fees from any given number of interlocked clients. In addition, the engagement partner has primary responsibility for audit quality because "he or she is responsible for the engagement and its performance" (Public Company Accounting Oversight Board [PCAOB] 2011, 2). The potential fee dependence threat associated with audit committee-audit partner interlocks, and the dearth of directly relevant empirical evidence, are the primary motivation for our study.

We measure an audit partner's dependence on fees from interlocked clients using metrics that increase with the relative magnitude of fees earned within the network to the audit partner's total fee revenue, and use two proxies for audit quality: the likelihood of issuing a first-time going-concern modified audit opinion, and client absolute discretionary accruals.[5] If an audit

[1] The amended paragraph 290.220.1 in APES 110 states "In certain circumstances another party or Firm may refer multiple Audit Clients to a Firm. In these circumstances, when the total fees in respect of multiple Audit Clients referred from one source represent a large proportion of the total fees of the Firm expressing the audit opinions, the dependence on that source and concern about losing those clients creates a self-interest or intimidation threat" (APESB 2013b).

[2] APES 110.100.12 defines a self-interest threat as the threat that a financial or other interest will inappropriately influence the auditor's judgment or behavior. One issue that can raise a self-interest threat is undue dependence on the fees from a client or group of clients, per APES 110.290.217 (APESB 2013a).

[3] This nomenclature is used to identify the firm whose audit quality is measured in a particular client-year observation in our empirical samples. While a network may comprise three companies, each client-year observation refers to the observed audit quality supplied to the "focal company," which may be affected by fees received from "interlocked companies."

[4] Our approach is consistent with Seabright et al. (1992), who focus on auditors' relationships with audit committee members due to the frequency of interaction between these parties, the partners' direct influence on audit effort and quality, and the audit committee's role in auditor appointment, removal, and remuneration.

[5] Knechel, Krishnan, Pevsner, Shefchik, and Velury (2013) present a taxonomy of audit quality research in which the underlying phenomena are described in terms of inputs (e.g., audit knowledge and professional skepticism), processes (e.g., risk assessment and client negotiations), and outcomes (e.g., financial reporting quality and properties of audit reports), the relationship between which is moderated by context (factors specific to the engagement). In this schema, our audit-quality metrics (going-concern modified audit opinion and discretionary accruals) reflect audit outcomes, and our measures of potential fee dependence indicate the engagement-specific context hypothesized to impact audit quality.

partner's independence is compromised, then he or she will be less likely to issue a going-concern modified audit report for a financially distressed client. Several studies use this type of audit opinion as a proxy for audit quality (e.g., Reynolds and Francis 2001; Carey and Simnett 2006; Hunt and Lulseged 2007; Li 2009; Blay and Geiger 2013). Several studies also use discretionary accruals as a measure of audit quality (e.g., Reynolds and Francis 2001; Gaver and Paterson 2007; Chung and Kallapur 2003; Hunt and Lulseged 2007; Chi et al. 2012).[6] A client's absolute discretionary accruals represent the proportion of total accruals that cannot be explained by economic fundamentals and, thus, is expected to be correlated with the client's earnings management behavior (e.g., Jones 1991; DeFond and Jiambalvo 1994; Reynolds and Francis 2001; DeFond, Raghunandan, and Subramanyam 2002; Chung and Kallapur 2003; Gaver and Paterson 2007; Hunt and Lulseged 2007; Chen et al. 2010; Chi and Chin 2011; Karjalainen 2011; Chi et al. 2012). The absolute value of discretionary accruals measure reflects the economic effect of management's accrual decisions regardless of direction (Francis, LaFond, Olsson, and Schipper 2005).

To test our conjectures, we exploit the data advantages of the Australian institutional environment, where audit engagement partner identity and audit fees are publicly disclosed and where the majority of economically relevant firms must have an audit committee and disclose its membership.[7] We test the association between each audit-quality proxy and each client network fee dependence measure using regressions based on unrestricted samples and samples of clients matched on their inherent propensity to be associated with an audit committee-audit partner interlock (i.e., propensity score matched regressions). We find a significant negative association between network fee dependence and the likelihood of issuing a first-time going-concern modified audit report for both our unrestricted and propensity score matched samples. We find a significant and positive association between our client network fee dependence measures arising from audit committee member-audit partner interlocks and the absolute value of discretionary accruals in both our full sample and propensity score matched regressions. Our results are robust to alternative measures of fee dependence and alternative samples. Collectively, our results support the contention that audit partner dependence on fees from other companies in the network arising from audit committee member-audit partner interlocks erodes audit quality.

The remainder of the paper is organized as follows: The next section discusses the prior literature and development of our research question. The third section provides the research method and definitions of variables. The fourth section describes our sample, and the fifth section reports our findings. The final section discusses our findings and recommendations for future research.

PRIOR LITERATURE AND RESEARCH QUESTION DEVELOPMENT

Traditional agency theory identifies external auditors as a monitoring mechanism employed to reduce the costs of imperfect incentive alignment between managers and shareholders (Jensen and Meckling 1976). However, the effectiveness of auditing relies on the independence of those providing the audit service. Regulators have expressed concerns that an undue dependence on fees from a client at the individual partner, office, or firm level may have a detrimental effect on auditor independence and audit quality (APESB 2013a). Audit committee-audit partner interlocks have the potential to create an economic dependency on the network of clients created by the interlocks. Where interlocks exist, there are potential spillover effects of accounting disputes with a client within the interlocked network that may manifest in the loss of fees from multiple clients, and that may create a self-interest fee dependence threat to auditor independence. An auditor working on an engagement where there is at least one audit committee member who also fulfills this role for one or more other clients of the auditor may believe that constraining earnings management or issuing an audit report that is modified for going-concern reasons will reduce the likelihood of retention of not only the focal client's business, but also of the business of one or more other companies with audit committees on which the interlocked audit committee member is represented. For example, the auditor may have a disagreement with management over their choice or application of an accounting policy for the focal company, and adoption of the auditor's viewpoint may reduce reported earnings in a period. If the interlocked audit committee member views the auditor's position as unreasonable, then this may influence his or her recommendation of the auditor's reappointment for both the focal company and other companies with audit committees on which the interlocked audit committee member is represented that have the same audit partner. Chen, Chou, Duh, and Lin (2014) note that audit committee

[6] While commonly employed in audit and related research, the validity of estimated discretionary accruals as a proxy for audit or financial reporting quality has been questioned in the literature. In particular, absolute measures of discretionary accruals potentially reflect all factors that increase with the difficulty in modeling the accrual process, as well as the intentional manipulation of earnings (Hribar and Nichols 2007).

[7] The Companies Act 2001 requires that the audit report must be signed in the name of the engagement partner as well as the firm, allowing us to identify the engagement partner. The Australian Securities Exchange Corporate Governance Council (ASX 2014) and the Corporate Law Economic Reform Program (CLERP 9) (Australian Securities and Investment Commission [ASIC] 2004) require the top 500 listed companies and any company that is included in the Standard & Poor's (S&P)/ASX All Ordinaries Index to have an audit committee and to report on its composition. We describe the regulation of audit committees in Australia in more detail in our "Sample Description" section.

members have a voice in the process through which auditors are hired and retained, and argue that interlocking audit committee members can affect the hiring of auditors for more than one company, thereby creating economic incentives for the auditor that may compromise auditor independence. The potential for audit partner dependence on revenue from particular clients or groups of clients is not restricted to small audit firms. Regardless of the audit firm identity, audit partners service a limited number of clients concurrently, generally from a single office, and the loss of a client implies potential personal costs to that partner. This may result in the auditor not raising contentious issues with the audit committee or giving economically more important clients a more favorable treatment.

Diminished independence resulting from the potential economic costs of losing fees from multiple clients may result in decreased levels of professional skepticism and/or increase the likelihood that the auditor accedes to executive management pressure when disputes arise regarding financial reporting issues. Although these arguments may apply to the audit firm, audit office, and the audit partner, the arguments are stronger for individual partners because of the emphasis on individual auditor incentives. The impact of losing an important client or group of clients is more important to the engagement partner than the local office or audit firm because the impact on the audit partner is going to be more material than the impact on the local office or audit firm (Li 2009; Chen et al. 2010).

However, the audit partner whose signature appears on the audit report has incentives to protect his or her reputation and reduce his or her litigation risk (PCAOB 2009). Low-quality audits can impair an audit partner's reputation and have a negative impact on the partner's ability to obtain and retain clients in the local audit market (Reynolds and Francis 2001; Li 2009). Clients with larger audit fees (more important clients) are likely to be larger clients and thereby impose greater litigation risk (Stice 1991; Lys and Watts 1994).[8] Thus, more important clients are associated with stronger incentives to protect the audit partner's reputation and reduce their litigation risk. However, this quality-enhancing effect does not necessarily apply to the importance of networks of companies created by the audit committee member-audit partner interlocking. If the auditor is sued for a questionable audit of the focal client, then it does not necessarily follow that the other companies in an interlocked network will engage in litigation regarding the audit. As a result, client importance relating to the focal client may have a different effect on audit quality than does the importance of other clients in the interlocked network.

Several studies investigate the relation between client economic importance and the likelihood of an auditor issuing a going-concern opinion. The results are mixed, with some studies reporting a positive association (Reynolds and Francis 2001; Hunt and Lulseged 2007); no association (Goodwin and Wu 2015); a negative association (Blay and Geiger 2013); and both a positive and negative association depending on whether the data are from a pre-Sarbanes Oxley Act (SOX, U.S. House of Representatives 2002) sample period or a post-SOX sample period.

Studies of the relation between client economic importance and discretionary accruals also report mixed results. Reynolds and Francis (2001), Chung and Kallapur (2003), and Gaver and Paterson (2007) find that Big N auditors do not allow more accounting discretion to clients that are more important at the office level. Hunt and Lulseged (2007) find a similar result for clients of non-Big 5 auditors. Chi et al. (2012) find no significant association between client importance at the partner level and abnormal accruals for Big N audit partners. However, they report a negative relation between client importance and auditor independence for non-Big N auditors. Goodwin and Wu (2015) report a negative association between discretionary accruals and client importance at the audit partner level.

While our theory is driven by incentives facing the audit partner, the outcomes of an interlocked audit partner's incentives to acquiesce to client demands is conditional on the assumed efficiency and effectiveness of the monitoring performed by the audit committee (Carcello, Neal, Palmrose, and Scholz 2011; Chen et al. 2014). Although we do not rely on assumed differences in monitoring quality across interlocked audit committee members and other audit committee members, we do assume the following: (1) imperfect information, knowledge, and/or incentives may cause audit committee members to be imperfect monitors; (2) that these imperfections may induce an audit committee member to align with management in disputes with the audit partner; and (3) that audit committee members have the ability to influence the auditor hiring and retention processes. We discuss the theory and evidence in support of these assertions below.

Fama and Jensen (1983) argue that outside directors experience labor market benefits and costs as a consequence of their demonstrated monitoring ability and, thus, may gain or lose directorships and prestige according to their monitoring performance. Consistent with this, Srinivasan (2005) finds that directors of companies that restate earnings or are associated with financial fraud have fewer directorships in the future. However, incentives to retain a directorship can conflict with the incentive to be viewed as an effective monitor. This is because the CEO can influence a director's reappointment to the board, and close monitoring or critical questioning of the CEO can threaten that reappointment (Masulis and Mobbs 2013). In a

[8] Auditor litigation risk has become more important in Australia after the introduction of class action lawsuits in Australia. *The Australian* (Main 2011) reports that auditors are being sued by liquidators, the Australian Securities and Investment Commission (ASIC), and in class actions with some regularity.

similar vein, Peecher, Rowe, and Sivadasan (2015) argue that a segment of the directorial market demands "compliant" directors, who are less committed to external monitoring and obtain multiple directorships as a consequence. Peecher et al. (2015) find that for each additional audit committee membership held, "compliant" audit committee members (proxied by abnormally low audit fees paid by the companies on whose audit committees they sit) are associated with greater income-increasing earnings management and a lower probability of restating misstated financial statements, relative to "vigilant" directors. Thus, these contrary incentives suggest that reputation effects will not always induce efficient monitoring by outside directors (or audit committee members).

Even in cases where reputational effects provide audit committee members with strong incentives to monitor management effectively, the imperfect or incomplete information regarding the "true" economic performance and position of the client firm, insufficient expertise, or busyness may impair audit committee members' ability to monitor the financial reporting process. Most accounting judgments are made on the basis of incomplete information, and opportunistic management may withhold (or distort) some of the extant information when communicating with the audit committee. There is abundant evidence of variation in performance of audit committees according to fundamental characteristics (e.g., DeZoort and Salterio 2001; Bédard, Chtourou, and Courteau 2004; Peasnell, Pope, and Young 2005; Yang and Krishnan 2005; Abbott, Parker, and Peters 2004; Choi, Jeon, and Park 2004; Sharma and Iselin 2012) that emphasizes the fact that audit committee monitoring is imperfect, while other literature finds that significant numbers of auditors (Cohen, Krishnamoorthy, and Wright 2002, 2010) and audit committee members believe that audit committees are not effective monitors of the reporting process (Beasley, Carcello, Hermanson, and Neal 2009; Cohen, Hayes, Krishnamoorthy, Monroe, and Wright 2013). Furthermore, as the number of directorships held increases, the amount of time that a director can devote to any particular company decreases, which reduces their effectiveness as a monitor (Fich and Shivdasani 2006; Core, Holthausen, and Larcker 1999).

When incentives and/or informational constraints render monitoring imperfect, it is plausible that an audit committee member will align with management in disputes with an auditor even if the auditor's position is reasonable. For example, an audit committee member may be inclined to support management in a dispute over a potential going-concern opinion, because either their own assessment of the relevant risks differs from that of the auditor, or because of the incentives to protect their tenure and reputation as a director who is an effective monitor.[9] Given that imperfect audit committee monitoring may induce audit committee members to support management in particular disputes with an auditor, even where the auditor's position is reasonable, and the fact that part of the audit committee's function is to monitor auditor performance, it is plausible that disputes such as those described above could credibly threaten an audit partner's tenure. If an interlocked audit committee member is involved in such a dispute and, thus, was dissatisfied with the audit partner's performance at the focal client, then this dissatisfaction could affect the audit committee member's recommendation regarding the continued tenure of the audit partner in other firms in the network. If an audit partner perceives that such disputes may have spillover effects to interlocked firms, then a greater independence threat is implied, consistent with Chen et al. (2014).

Given the competing arguments and the mixed results reported in the literature with regard to client importance, it is unclear whether the threats to audit independence created by the audit committee member-audit partner interlocking will dominate the reputation and litigation effects for engagement audit partners. Therefore, we present the following non-directional research question (RQ):

RQ: Is there an association between networked clients' economic importance and audit quality?

RESEARCH METHOD

We first explain and describe our measures of audit quality, audit opinion type (first-time going-concern opinion), and earnings management (discretionary accruals). This is followed by an explanation and description of our measures of networked clients' fee dependence, and then a discussion of the regression models used to address our research question.

Audit Opinion

Our first proxy for audit quality is *FTGC*, which is a dummy variable equal to 1 if the auditor issues any form of modified (including emphasis of matter, "except for," adverse, or limitation on scope) audit report for reasons pertaining to going-concern issues, and the previous year's audit report contained no similar modifications. For ease of exposition, we refer to these

[9] Fahlenbrach, Low, and Stulz (2010) report that outside directors are more likely to relinquish their directorships prior to poor performance, which they interpret as an effort to protect their reputation. Directors of a company that is about to receive a first-time going-concern opinion may be more likely to relinquish their directorship prior to the company receiving such an opinion. Alternatively, they may negotiate with the auditor or pressure the auditor to avoid such an opinion, thus preserving their reputation as an effective monitor.

types of audit reports as "first-time going-concern opinions." If an auditor's independence is compromised, then he or she will be less likely to issue a going-concern opinion. The likelihood that an auditor will issue a going-concern opinion has been employed in the prior literature as a proxy for audit quality in several studies (e.g., Reynolds and Francis 2001; Carey and Simnett 2006; Hunt and Lulseged 2007; Li 2009; Blay and Geiger 2013; Goodwin and Wu 2015). A negative relation between *FTGC* and our test variables indicates impaired audit quality, while a positive relation indicates higher audit quality. When testing this proxy, we follow Blay and Geiger (2013) and Goodwin and Wu (2015) and restrict our sample to companies with current-year losses and negative operating cash flows.

Earnings Management

Earnings management refers to the use of accounting discretion to bias reported earnings away from the level that would be reported if accounting standards were applied objectively, either to affect contractual outcomes or to mislead stakeholders as to the company's performance (Healy and Wahlen 1999). Consistent with prior literature, which argues that unsigned measures of earnings management are a more complete measure of managerial reporting discretion tolerated by the auditor (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Frankel, Johnson, and Nelson 2002; Menon and Williams 2004; Hoitash, Markelevich, and Barragato 2007), we use the absolute value of discretionary accruals as our second proxy for audit quality. Where audit quality is low, absolute discretionary accruals are likely to be greater, because managerial attempts to manipulate earnings are more likely to be successful.

To estimate discretionary accruals, we use an adaptation of the modified Jones model that includes a control for current performance (Kothari, Leone, and Wasley 2005). Subject to a minimum of ten observations in each industry for each year, this model is estimated cross-sectionally for each four-digit Global Industry Classification Standard (GICS) (six-digit for the Materials sector) industry group in each of the years 2003–2011 as per Equation (1):

$$TACC_{it} = \alpha + \beta_1(\Delta REV - \Delta REC)_{it,t-1} + \beta_2 PPE_{it} + \beta_3 ROA_{it} + \varepsilon_{it} \quad (1)$$

where for company i and time t: $TACC$ = total accruals, equal to the difference between operating income (OI) and cash flow from operations (CFO); ΔREV = change in revenue from period $t-1$ to period t; ΔREC = change in net accounts receivable from period $t-1$ to period t; PPE = opening gross value of property, plant, and equipment; ROA = return on assets for period t, defined as net operating profit divided by average total assets; and ε = error term, the absolute value of which represents our discretionary accruals proxy. The intercept and all variables, other than ROA, are scaled by the average value of total assets between t and $t-1$ to reduce heteroscedasticity. A positive relation between absolute discretionary accruals (*ABSDACC*) and our test variables indicates impaired audit quality, while a negative relation indicates higher audit quality.

Networked Clients' Fee Dependence Measures

We use company annual reports to identify all audit committee members who attended at least one audit committee meeting, and then prepared a list of each individual's annual audit committee memberships. Cases of individuals apparently sitting on multiple audit committees were verified using additional sources, including company and stock exchange websites. We collected names of audit firms and their signing partners from each company's audit report. The lists of audit committee members, audit firms, and audit partners and the companies to which they were connected were then reconciled to identify cases where companies shared a common audit committee member and a common audit partner. From this data, we calculated measures of the fee dependence implications of audit committee-audit partner interlocks, which we describe below. When discussing the measurement of these proxies, we describe the company for which we are measuring the interlocks as the "focal company," and other companies that share at least one common audit committee member and common audit partner with the focal company as "interlocked companies." We describe these "interlocked companies" collectively as members of the focal company's "network."

We use three variables to measure networked clients' importance (fee dependence)—*NETWORKFEEDEP*, *HIGHNETFEEDEP10*, and *HIGHNETFEEDEP15*. Our first variable, *NETWORKFEEDEP*, measures the importance to the audit partner of audit fees received from companies with which the client has an audit committee-audit partner interlock. Network fee dependence is calculated as the sum of audit fees received from clients who share a common audit committee member and audit partner with the focal company, divided by the total audit fees payable by all clients of the audit partner in a given year.[10] The numerator in *NETWORKFEEDEP* is exclusive of any fee dependence attaching to the focal company, which we control for

[10] Audit partners may benefit directly (through profit- or revenue-sharing pools) or indirectly from the retention of clients responsible for large nonaudit service fees. Consequently, we reestimated all of our models substituting client and network fee dependence measures based on total audit and nonaudit service fees. The tenor of our results was unaffected by this choice.

separately. For example, in the case of a network comprising two interlocked companies, Client A and Client B, when estimating *NETWORKFEEDEP* for the audit of Client A, the numerator is equal to the audit fees earned from Company B. For Client B, the numerator in *NETWORKFEEDEP* is the audit fee earned from Company A. While both of the interlocked firms appear in our sample, each interlocked firm has a distinct measure of *NETWORKFEEDEP*, determined by the relative importance of fees from the other firm(s) in the network. *HIGHNETFEEDEP10* (*HIGHNETFEEDEP15*) is a dichotomous variable indicating the existence of audit committee-audit partner interlocks where network fee dependence (*NETWORKFEEDEP*) is greater than 10 percent (15 percent). We discuss the impact of varying the threshold at which fee dependence is defined as "high" in our additional analyses.

Regression Models

We first test the association between each audit-quality proxy and each interlock measure using standard single-stage regressions (logistic regression or ordinary least squares [OLS]). Because the incidence of audit committee-audit partner interlocks is unlikely to be randomly determined and, as such, the factors that induce such interlocks may be correlated with our audit quality measures, we employ a method developed by Rosenbaum and Rubin (1983) and reestimate our regressions using samples matched according to companies' inherent propensity to engage in audit committee-audit partner interlocks ("propensity score matched regressions"). Our models of audit opinion are logistic regressions of factors explaining the likelihood of issuing a modified audit report for going-concern reasons, where no similar opinion was issued in the previous year (Equation (2)). Absolute discretionary accruals are modeled using OLS (Equation (3)). The specifications of the single-stage models are as below:

$$\begin{aligned} FTGC_{it} = {} & \alpha_0 + \beta_1 NETWORK\_IMPORTANCE_{it} + \beta_2 ACOnly\_Lks_{it} + \beta_3 CLIENTFEEDEP_{it} + \beta_4 BIG4_{it} + \beta_5 APTENURE_{it} \\ & + \beta_6 APBUSY_{it} + \beta_7 APINDSPEC_{it} + \beta_8 FEERATIO_{it} + \beta_9 ACSIZE_{it} + \beta_{10} INDEPAC_{it} + \beta_{11} SIZE_{it} \\ & + \beta_{12} BDSIZE_{it} + \beta_{13} BDINDP_{it} + \beta_{14} AGE + \beta_{15} LOSS_{it,t-1} + \beta_{16} ROA_{it} + \beta_{17} LEV + \beta_{18} CFO + \beta_{19} ZSCORE_{it} \\ & + \beta_{20} INVESTMENTS_{it} + \beta_{21} ISSEQ + \beta_{22} ISSDEBT + \beta_{23} RETURN + \beta_{24} BETA + \beta_{25} VOLATILITY + \varepsilon_{it} \end{aligned} \tag{2}$$

$$\begin{aligned} ABSDACC_{it} = {} & \alpha_0 + \beta_1 NETWORK\_IMPORTANCE_{it} + \beta_2 ACOnly\_Lks_{it} + \beta_3 CLIENTFEEDEP_{it} + \beta_4 BIG4_{it} \\ & + \beta_5 FEERATIO_{it} + \beta_6 APTENURE_{it} + \beta_7 APBUSY_{it} + \beta_8 APINDSPEC_{it} + \beta_9 ACSIZE_{it} + \beta_{10} INDEPAC_{it} \\ & + \beta_{11} SIZE_{it} + \beta_{12} BDSIZE_{it} + \beta_{13} BDINDP_{it} + \beta_{14} LOSS_{it,t-1} + \beta_{15} ROA_{it} + \beta_{16} CFVOL_{it-1,t-5} + \beta_{17} LEV_{it} \\ & + \beta_{18} MB_{it} + \varepsilon_{it} \end{aligned} \tag{3}$$

where *i* and *t* represent company and time subscripts, respectively. Both models include untabulated year and industry fixed effects. Industries are identified at the two-digit GICS level in the first-time going-concern model and the four-digit GICS (six-digit for the Materials sector) in the discretionary accruals model. All variable definitions are presented in Table 1.

For our propensity score matched models, we first estimate logistic regressions explaining the probability that a company is a member of at least one audit committee-audit partner interlock in a given year.[11] In these regressions, the dependent variable (*AnyAC-AP_Lks*) is regressed against measures of other types of interlocks in existence with respect to a client and the relevant vector of independent variables (from Equations (2) and (3) above):[12]

$$\begin{aligned} AnyAC\text{-}AP\_Lks_{it} = {} & \alpha_0 + \beta_1 AC\text{-}AFOnly\_Lks_{it} + \beta_2 NonACDir\text{-}AFOnly\_Lks_{it} + \beta_3 NonACDir\text{-}APOnly\_Lks_{it} \\ & + \beta_4 ACOnly\_Lks_{it} + CONTROLS + \varepsilon_{it} \end{aligned} \tag{4}$$

We include measures of the number of interlocks between clients who share a common audit committee member and common audit firm, but do not share a common audit partner (*AC-AFOnly_Lks*); clients who share a common audit committee member with the focal company, but not a common audit firm or partner (*ACOnly_Lks*); and clients who share common directors who do not sit on the audit committee and either common audit firms (*NonACDir-AFOnly_Lks*) or common audit

[11] Our approach is similar to that adopted by Lawrence, Minutti-Meza, and Zhang (2011) in their control for the endogenous selection of Big N auditors. Matching approaches can be subject to bias if the predictors are causally affected by the outcome variable (*AnyAC-AP_Lks*). While it is not obvious why the existence of audit committee-audit partner interlocks would causally affect performance, risk, or any of our auditor attributes, we tested several model variants in which we excluded subsets of the predictors according to type (e.g., auditor attributes, other interlocks, performance). The results later tabulated do not appear to be sensitive to these modeling choices.

[12] In the first stage of our discretionary accruals propensity matching approach, we use the signed value of *ROA*, rather than *ABSROA*, because this measure is a superior predictor of the incidence of audit committee-audit partner interlocks, with models employing this measure generating pseudo-R^2 statistics approximately 0.5 percent higher than those using *ABSROA*. Our results are not sensitive to this modeling choice.

TABLE 1

Variable Definitions

Variable Name	Variable Definitions
Dependent Variables	
FTGC	1 if the auditor issues any form of modified (including emphasis of matter, "except for," adverse, or limitation on scope) audit report for reasons pertaining to going-concern issues, and there was no similar opinion in the prior year.
ABSDACC	absolute value of discretionary accruals, calculated as the residuals from Equation (1): $TACC = \alpha + \beta_1(\Delta REV - \Delta REC) + \beta_2 PPE + \beta_3 ROA + \varepsilon$. $TACC$ = total accruals; $(\Delta REV - \Delta REC)$ = change in revenue from period $t-1$ to period t minus change in account receivables from period $t-1$ to period t; PPE = gross value of property, plant, and equipment; ROA = return on assets.
Test Variable	
$NETWORK\_IMPORTANCE_{it}$	alternate proxies for the measure of networked client fee dependence, including:
NETWORKFEEDEP	sum of audit fees received from clients who share a common audit committee member and audit partner with the focal company (excluding audit fees from the focal company) divided by the total audit fees payable by all clients of the audit partner in a given year;
HIGHNETFEEDEP10	1 where $NETWORKFEEDEP \geq 10$ percent, and 0 otherwise; and
HIGHNETFEEDEP15	1 where $NETWORKFEEDEP \geq 15$ percent, and 0 otherwise.
Control Variables and Variables used in First Stage of Propensity Score Matched Models	
ACOnly_Lks	number of other companies that share a common audit committee member with the focal company, but do not share a common audit firm or partner.
AnyAC-AP_Lks	1 if at least one member of the focal company's audit committee sits on the audit committee of at least one other company with a common audit partner, and 0 otherwise.
AC-AFOnly_Lks	number of other companies that share a common audit committee member and common audit firm with the focal company, but do not share a common audit partner.
NonACDir-AFOnly_Lks	number of other companies that share a common director (who is not an audit committee member) and common audit firm with the focal company, but do not share a common audit partner.
NonACDir-APOnly_Lks	number of other companies that share a common director (who is not an audit committee member) and common audit partner with the focal company.
AC-AP_LksFms	number of other companies that share a common audit committee member and a common audit partner with the focal corporation.
NewAC-AP_LksAny	1 if a new audit committee-audit partner interlock is formed where no audit committee-audit partner interlocks existed in the previous year.
LOWNETFEEDEP	1 where audit committee-audit partner interlocks exist, but where *NETWORKFEEDEP* is less than 10 percent (15 percent), and 0 otherwise. This control is only included in models where the test variable is *HIGHNETFEEDEP*.
BIG4	1 if company's incumbent auditor is a Big 4 audit firm, and 0 otherwise.
CLIENTFEEDEP	total audit fees paid by the focal company divided by the total annual audit fees paid by all companies audited by the audit partner.
FEERATIO	ratio of fees paid for nonaudit services to total audit and nonaudit fees.
APTENURE	audit partner tenure measured in years.
NEWAP	1 if audit partner tenure equals 1, and 0 otherwise.
APBUSY	natural log of the number of clients for which the focal company's audit partner is the signing partner in the current year.
APINDSPEC	audit partner industry specialization, measured by the ratio of the square root of total fees earned in the focal company's industry to square root of total fees earned in a the current year.
ACSIZE	number of members sitting on the focal company's audit committee.
INDEPAC	1 if the audit committee comprises a majority (50 percent or more) of non-executive directors, and 0 otherwise.
SIZE	natural log of total assets.
BDSIZE	number of directors sitting on the focal company's board of directors.
BDINDP	proportion of the focal company's board of directors who are non-executive directors.
AGE	natural logarithm of the number of years since the focal company became a listed company.
LOSS	1 if the company reported a loss either in the current year or previous year, and 0 otherwise.
ROA	operating income divided by average total assets.
ABSROA	absolute value of operating income divided by average total assets.

(continued on next page)

TABLE 1 (continued)

Variable Name	Variable Definitions
CFO	net cash from operating activities divided by average total assets.
ZSCORE	Zmijewski's Z-score, a measure of financial distress.
INVESTMENTS	ratio of short-term and long-term investment securities (including cash) to total assets.
LEV	ratio of total liabilities to total assets.
ISSEQ	1 if the company issues equity during the year, and 0 otherwise.
ISSDEBT	1 if the gross debt increased by more than 5 percent during the year, and 0 otherwise.
RETURN	client stock return of the fiscal year.
BETA	client beta, estimated using the market model over the fiscal year.
VOLATILITY	variance of the residual from the market model estimated over the fiscal year.
MB	end-of-year market value of equity divided by book value of shareholders' equity.
CFVOL	natural log of the five-year standard deviation of company's cash flow from operations (deflated by total assets) measured between $t-5$ and $t-1$.

partners (*NonACDir-APOnly_Lks*), because we find that these are collectively strong predictors of a client's inherent likelihood to be a member of an audit committee-audit partner interlock. Each of these variables is defined such that they exclude cases in which our test variables have non-zero values, to reduce mechanical collinearity with audit committee-audit partner interlocks and to simplify the interpretation of regression coefficients.

We then collect the propensity scores generated for each case, and conduct a one-to-one nearest-neighbor match of treatment (companies who share at least one audit committee member and audit partner with another company) and control companies (companies with no audit committee member-audit partner interlocks), subject to a restriction that the difference in propensity scores across matched companies is less than 25 percent of the standard deviation of the propensity scores generated in each model.[13] We later show that all of our models satisfy standard tests of balance (i.e., there are no significant differences in mean values for any control variables between the matched treatment and control companies), and that we are able to match the vast majority of our interlocked companies to a similar control company. We do not include the "other interlock" measures in our second-stage regressions because none of them have significant explanatory power over audit opinion or discretionary accruals, and because the coefficients for our test variables are substantially unaffected by their inclusion. For brevity, we do not tabulate the results of our first-stage regressions. Both models are reasonably well fitted, with pseudo-R^2 statistics of 22.4 percent and 18.5 percent, respectively, and the majority of regressors are significant.[14]

Control Variables

Most of the control variables used in this study are drawn from the extant literature. We also include additional control variables that are logically related to our test variable to reduce the threat of omitted variable bias. For models where our test variable is *HIGHNETFEEDEP10* (*HIGHNETFEEDEP15*), we include an additional control variable (*LOWNETFEEDEP*) indicating cases where audit committee-audit partner interlocks exist, but where *NETWORKFEEDEP* is less than 10 percent (15 percent).[15]

We control for the number of other firms with which the focal company shares at least one audit committee member, but no common audit firm or partner (*ACOnly_Lks*), because this variable is strongly correlated with our test variables and with the busyness of the audit committee, and its omission may, therefore, lead to spurious correlation. We control for audit firm size (*BIG4*) because large audit firms may possess a technological advantage and because smaller audit firms may be less willing to issue going-concern opinions due to their greater financial dependence on individual clients (Monroe and Teh 1993; Jackson, Moldrich, and Roebuck 2008). Audit firm size has also been associated with absolute discretionary accruals (Becker et al. 1998; Francis, Maydew, and Sparks 1999).

We control for an audit partner's dependence on total fees from the focal company (*CLIENTFEEDEP*) because prior studies find that such fee dependence is associated with audit quality (Chen et al. 2010; Chi et al. 2012), and client fee

[13] This results in a "caliper" setting of approximately 3 percent for our opinion models and 2.5 percent for our discretionary accruals models. We conducted numerous tests of the sensitivity of our propensity score matched results to modeling choices, including varying the caliper applied in the matching process, and matching treatment firms to multiple control firms. For each matched sample that met our balancing criteria, our tabulated results were supported.

[14] Full results are available from the authors on request.

[15] We reestimated each of our models including indicators of high network fee dependence, using alternate thresholds to define this variable. Our tabulated results hold for all thresholds between 5 percent and 18 percent.

dependence may be correlated with our test variables. The direction of any association between *CLIENTFEEDEP* and audit quality is unclear, because although high dependence on fees from a single client may impair independence, high fee dependence on the focal company is likely to be positively correlated with litigation risk and, thus, may encourage higher audit quality. Similarly, we include the ratio of nonaudit fees to the sum of audit and nonaudit fees (*FEERATIO*) to control incentive problems associated with auditor dependence on fees from nonaudit sources (Carey and Simnett 2006).

We include controls for audit partner attributes previously found to be associated with measures of audit quality. First, we control for audit partner tenure (*APTENURE*) because prior studies report evidence that longer tenure may affect auditor independence (Mansi, Maxwell, and Miller 2004; Ghosh and Moon 2005; Carey and Simnett 2006; Ryken, Radich, and Fargher 2007; Boone, Khurana, and Raman 2008; Chen, C.-J. Lin, and Y.-C. Lin 2008; Turner, Mock, and Manry 2008). We also control for the log of the number of clients that an audit partner services in a given year (*APBUSY*) because recent literature reports a negative relationship between this measure and the likelihood of issuing a going-concern opinion (Sundgren and Svanström 2014; Goodwin and Wu 2015). As the extent to which an audit partner's clients are concentrated in a particular industry may be associated with both audit quality and the incidence of interlocks (because audit committee members may also specialize by industry), we control for audit partners' portfolio industry specialization (*APINDSPEC*). *APINDSPEC* may improve audit quality through economies of specialization, but may have an indirect negative association with audit quality if greater specialization makes an audit partner more dependent on retaining the business of their existing clients within their industry specialization.

We include a control variable for audit committee size (*ACSIZE*) in all models because this variable is likely to be correlated with our test variable, and prior research reports an association between this measure and proxies for audit quality (Carcello and Neal 2000). *ACSIZE* is the number of audit committee members. Audit committee independence, *INDEPAC,* is an indicator variable equal to 1 if the audit committee comprises a majority (50 percent or more) of non-executive directors, and 0 otherwise. *INDEPAC* has been found to be associated with audit opinion (Carcello and Neal 2000) and absolute discretionary accruals (Klein 2002).

The natural log of total assets (*SIZE*) is used to control for the effect of company size on the audit opinion because, for a large company, it is less likely that any uncertainties will be material enough to issue a modified opinion compared to a smaller entity (Monroe and Teh 1993; Chen et al. 2010; Chi et al. 2012). Company size has also been strongly associated with absolute discretionary accruals (Dechow and Dichev 2002; Hribar and Nichols 2007). The size of the focal company's board of directors (*BDSIZE*) is included because this variable is correlated with a company's propensity to have interlocks with other companies and has been found to be associated with factors affecting the likelihood of reporting fraud (Beasley 1996) and discretionary accruals (Xie, Davidson, and DaDalt 2003). The independence of the focal company's board of directors (*BDINDP*) is the proportion of the focal company's board of directors who are non-executive directors. *BDINDP* is correlated with our test variable and has been found to be associated with both discretionary accruals (Klein 2002) and the incidence of modified audit opinions (Farinha and Viana 2009). *LOSS* is an indicator variable equal to 1 if the company reported a loss either in the current year or previous year, and 0 otherwise. The incidence of financial losses in the current or prior year increases the likelihood of a modified audit opinion for going-concern issues because of increased bankruptcy and auditor litigation risk (Chen et al. 2010; Chi, Huang, Liao, and Xie 2009). Losses are also associated with greater absolute discretionary accruals (Frankel et al. 2002). In addition to our *LOSS* dummy, we include a continuous control for performance in a company's return on assets (*ROA*). An auditor may consider return on assets (*ROA*) when assessing the going-concern status of a client, which may affect the likelihood of issuing a going-concern type modification (Chen et al. 2010; Chi et al. 2012). Financial performance has also been associated with lower absolute discretionary accruals (Frankel et al. 2002).[16] We include leverage (*LEV*) to control the impact of client financial risk on bankruptcy risk and discretionary accruals (Blay and Geiger 2013; Hribar and Nichols 2007).

We employ eight control variables specific to our audit opinion model. We include client age because younger firms have a higher risk of failure (Blay and Geiger 2013). Following Carey and Simnett (2006) and Chi and Chin (2011), we also include two factors associated with the likelihood of financial distress: a variant of Zmijewski's (1984) Z-Score (*ZSCORE*), following Chi and Chin (2011),[17] and client cash flow (*CFO*), following Blay and Geiger (2013). We include the ratio of short- and long-term investments to total assets (*INVESTMENTS*) as a proxy for the effect of liquidity on opinion (DeFond et al. 2002). Indicators of the issuance of equity (*ISSEQ*) and debt (*ISSDEBT*) are included because the ability to raise funds reduces the likelihood of default (Blay and Geiger 2013). Following DeFond et al. (2002), we include current-year stock return (*RETURN*), client equity beta (*BETA*), and stock return volatility (*VOLATILITY*). Higher stock returns should be associated with a lower

[16] Frankel et al. (2002) use cash from operations as their performance proxy. We use *ROA* to maintain consistency with the models used to test other audit-quality proxies. Our results are not affected by this choice or by the inclusion of both measures in our regression.

[17] Consistent with the aforementioned papers, Z-score = −4.803 − 3.6 (net income/total assets) + 5.4 (total debt/total assets) − 0.1 (current assets/current liabilities).

chance of bankruptcy (and, thus, of receiving a going-concern opinion), whereas the risk proxies (*BETA* and *VOLATILITY*) should be positively associated with the incidence of first-time going-concern opinions.

Our discretionary accruals models include two variables specific to that measure. We include the natural log of the five-year standard deviation of company's cash flow from operations (deflated by total assets) measured between *t*–5 and *t*–1 (*CFVOL*) to control for impact of operating volatility on absolute measure of discretionary accruals (Hribar and Nichols 2007). Because of the severe sample attrition caused by the data requirements of this control, we also report results of regressions that exclude *CFVOL*. Finally, we include the market-to-book ratio (*MB*) to control for the potential effects of growth options on earnings management. *MB* is calculated as the end-of-year market value of equity divided by the book value of shareholders' equity.

SAMPLE DESCRIPTION

Data Sources

We use data from Australian-domiciled companies listed on the Australian Securities Exchange (ASX) during 2003–2011 to investigate the relationship between networked clients' importance (fee dependence) and audit quality. Data regarding the identity of audit committee members and audit partners were hand-collected from companies' annual reports available in the Morningstar DatAnalysis Premium or Connect4 databases. Financial data were obtained from the Morningstar Equity Feed database.

Sample Selection and Description

Our sample period begins in 2003 because the disclosures of audit committee existence and membership were not mandatory for Australian companies prior to that year. Issuance of the ASX Corporate Governance Principles and Recommendations and related amendments the ASX Listing Rules in 2003 required the top 500 listed companies to form audit committees (ASX Listing Rules 12.7).[18] The top 500 companies must also comply with the recommendations set by the ASX Corporate Governance Council in relation to the composition and operation of the audit committee for the whole of that financial year, unless it had been included in that index for the first time less than three months before the beginning of that financial year. The recommendations of the ASX Corporate Governance Council state that companies should structure the audit committee so that it consists of: only non-executive directors; a majority of independent directors; an independent director, who is not chairperson of the board; and at least three members.[19,20] The recommendations also indicate that the "audit committee should include members who are all financially literate (i.e., able to read and understand financial statements); at least one member who has financial expertise (i.e., is a qualified accountant or other financial professional with experience of financial and accounting matters); and some members who have an understanding of the industry in which the entity operates" (ASX 2003, 30). While these reforms allowed a transition period for top 500 companies so that they need not comply fully with the recommendations until July 1, 2005, requirements to have an audit committee comprised of a majority of non-executive directors, of which at least one member of the audit committee must be independent, took effect immediately.

While the 2003 reforms did not require firms outside the top 500 to follow the ASX Corporate Governance Principles and Recommendations, they did require other firms to disclose whether they adopted these recommendations and to provide reasons

[18] The initial amendment to the ASX Listing Rule was for such companies to either have an audit committee or provide an explanation as to why no audit committee had been formed. This requirement was amended effective May 3, 2004 to require all companies included in the S&P/ASX All Ordinaries Index (the top 500 firms) to have an audit committee.

[19] An independent director is defined as a director who is "independent of management and free of any business or other relationship that could materially interfere with—or could reasonably be perceived to materially interfere with—the exercise of their unfettered and independent judgement" (ASX 2003). Further guidance is provided to assess the independence of directors, such as they must be a non-executive director; must not: be a substantial shareholder of the company; been employed within the last three years in an executive capacity by the company; within the last three years, been a principal of a material professional advisor or a material consultant to the company, a material supplier, or customer of the company; have a material contractual relationship with the company; served on the board for a period that could, or could reasonably be perceived to, materially interfere with the director's ability to act in the best interests of the company; or have any interest and any business or other relationship which could, or could reasonably be perceived to, materially interfere with the director's ability to act in the best interests of the company (ASX 2003).

[20] Unlike the situation in the U.S., where, after the Sarbanes-Oxley Act of 2002, the audit committee represents the client with the power to appoint and terminate the audit firm, in Australia, shareholders of the company appoint and terminate the audit firm, generally after nomination of the firm by directors. ASIC guidance indicates that the audit committee and directors play an important role in recommending the appointment of an auditor. ASIC also indicates that non-executive directors should manage the process of appointing and replacing auditors and determine the remuneration of the auditors. The audit committee normally makes the recommendation to the board of directors, who then make the nomination to the stockholders. The nomination is almost always approved by the shareholders. The lack of a statutory requirement that the audit committee appoint and terminate the auditor may mean that audit committee member-audit partner interlocks may not play as important a role in Australia compared to the U.S. However, audit committees do play an important role in auditor selection and retention in Australia (ASX 2014).

TABLE 2

Sample Selection

Panel A: Sample Selection

	Opinion Sample	Discretionary Accruals Sample
Sample Selection		
Total company-years in Morningstar Equity Data Feed (2003–2011)	16,125	16,125
Less:		
No audit committee	6,238	6,238
Multiple audit partners	279	279
All Financial sector companies	—	1,678
Banks and insurance sector companies	197	—
Industries (four-digit) with < ten companies	—	67
Total Accruals > 100% of total assets or abs(ROA) > 100% of total assets	—	1,308
Incomplete financial data/audit opinion	1,332	575
Companies with negative equity	142	50
Companies with consecutive GC opinions	1,203	
Current-year losses and negative cash from operations requirement not met	4,277	
Missing market data	202	
Five-year cash flow volatility unavailable		1,397
Final Full Sample	2,252	4,533
Cases involving at least one audit committee-audit partner interlock	252	295
Less cases for which no matching control company is available	30	13
Number of treatment companies	222	282
Number of control companies	222	282
Final Propensity Score Matched Sample	444	564

Panel B: Sector

	Going-Concern Opinion Sample		Discretionary Accruals Sample	
Sector	**Freq.**	**%**	**Freq.**	**%**
Energy	366	16.4	463	10.2
Materials	1,052	47.2	1,252	27.6
Industrials	129	5.8	863	19.0
Consumer Disc.	82	3.7	754	16.6
Consumer Staples	41	1.8	186	4.1
Health Care	314	14.1	376	8.3
Financials	39	1.8	—	—
IT	130	5.8	457	10.1
Telcos	29	1.3	97	2.1
Utilities	45	2.02	85	1.9
Total	2,227	100.0	4,533	100.0

if recommendations were not adopted. Consequently, firms outside the top 500 were required to disclose whether they had an audit committee of composition consistent with the recommendations and, if not, to explain what alternate governance mechanisms were in place to safeguard the integrity of the reporting process (ASX Listing Rules Guidance Note 9, ASX Listing Rule 4.10.3). The 2003 reforms, thus, increased the rate of disclosure and made it easier to identify audit committee members and other corporate governance mechanisms that may not have been disclosed in the earlier years.

Table 2, Panel A details the determination of the samples employed for models testing each of our audit-quality proxies. Current-year financial data for Australian-domiciled ASX-listed companies are available for 16,125 company-years during 2003–2011. A number of sample restrictions are applied to all models. First, we exclude companies that had no audit committee

TABLE 3

Frequency of Audit Committee-Audit Partner Interlocks

	Full Samples			
	Audit Opinion Sample		Discretionary Accruals Sample	
	Freq.	%	Freq.	%
AnyAC-AP_Lks				
0	1,980	88.71	4,238	93.49
1	252	11.29	295	6.51
Total	2,232	100.00	4,533	100.00
AC-AP_LksFms				
0	1,980	88.71	4,238	93.49
1	212	9.50	262	5.78
2	24	1.08	19	0.42
3	8	0.36	9	0.20
4	8	0.36	5	0.11
Total	2,232	100.00	4,533	100.00

(6,238 company-years) because such companies cannot, by definition, have audit committee-audit partner interlocks, and their inclusion increases the chance of spurious correlation affecting our results. Second, we exclude companies with two audit firms/partners named in a given year (279 company-years) because it is difficult to determine influence in these cases.

From our audit opinion samples, we also exclude banks and insurance companies (197 company-years) in Table 2, Panel A because traditional audit opinion models are not well specified for these entities. We exclude 1,332 company-years with missing financial or audit opinion data (generally, lagged observations) and 142 firms with negative equity. Following Blay and Geiger (2013) and Goodwin and Wu (2015), we further restrict our sample to cases of financially distressed firms, which we identify as those with both current-year financial loss and negative cash from operations (excluding 4,277 company-years). After eliminating firms without the necessary stock return data, the final sample used to test our audit opinion models is 2,252 company-years.

The data requirements of our Jones-type discretionary accruals models reduce the sample available for estimating our absolute discretionary accruals regressions. Because Jones-type discretionary accruals models are unlikely to produce sensible estimates of earnings management for financial sector entities (1,678 company-years; Table 2, Panel A), we exclude these from our sample. Additionally, we require at least ten observations for each four-digit Global Industry Classification Standard (GICS) industry-year subsample in order to generate reliable estimated regression coefficients (excluding 67 company-years). To reduce the impact of outliers associated with companies undergoing significant structural change and extreme performance, we follow Teoh and Wong (2002) and also exclude observations where absolute total accruals exceed 100 percent of average total assets or absolute return on assets exceeds 100 percent (1,308 company-years) because these outliers exert significant leverage on the regression models used to measure discretionary accruals. There were 575 company-years with insufficient financial data (generally, missing lagged data) to estimate discretionary accruals, and 50 company-years with negative equity. Finally, there were 1,397 company-years for which there were insufficient data to estimate the five-year cash flow volatility, which is a key control in our absolute discretionary accruals regressions. This results in a final sample of 4,533 company-years. The industry distribution of each sample is described in Panel B of Table 2.

In Table 3, we describe the frequency of each measure of the incidence and number of audit committee-audit partner interlocks. Panel A shows that between 6 percent and 11 percent of companies in our main samples have at least one audit committee-audit partner interlock, and the majority of interlocks involve just one other company (i.e., cases where *AC-AP_LksFms* = 1).[21] The interlocked firms are economically significant, with a total market capitalization of $282 billion and mean assets of $956 million (the mean assets of firms without such interlocks is $1,087 million). Although most of the interlocks involve only one other firm, networked client importance drives our results rather than the number of interlocks. Untabulated analysis reveals that interlocks are quite "sticky," with only 229 changes in interlock status (96 cases where all locks were

[21] For comparison purposes, we computed the percentage of our sample that had at least one audit committee member-audit firm interlock. The percentage of firms that have at least one audit committee member-audit firm interlock is 24.9 percent in our first-time going-concern opinion sample and 27.9 percent in our discretionary accruals sample (untabulated). This is very similar to the 24.8 percent reported by Chen et al. (2014) for their sample of U.S. firms.

TABLE 4

Descriptive Statistics

	Full Samples					
	FTGC Sample			ABSDA Sample		
Variables	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**
FTGC/ABSDA	0.159	0	0.366	0.077	0.051	0.079
AnyAC-AP_Lks	0.113	0	0.317	0.065	0	0.247
AC-AP_LksFms	0.142	0	0.456	0.077	0	0.323
NETWORKFEEDEP	0.02	0	0.079	0.014	0	0.072
HIGHNETFEEDEP	0.044	0	0.206	0.023	0	0.149
LOWNETFEEDEP	0.069	0	0.253	0.042	0	0.201
AC-AFOnly_Lks	0.213	0	0.54	0.349	0	0.735
NonACDir-AFOnly_Lks	0.485	0	0.845	0.578	0	0.973
NonACDir-APOnly_Lks	0.24	0	0.642	0.144	0	0.546
ACOnly_Lks	0.65	0	0.77	0.809	1	0.865
CLIENTFEEDEP	0.237	0.123	0.281	0.396	0.28	0.333
FEERATIO	0.188	0.111	0.214	0.238	0.201	0.212
BIG4	0.427	0	0.495	0.643	1	0.479
APTENURE	0.791	0.693	0.608	0.825	0.693	0.654
APBUSY	1.785	1.792	0.939	1.384	1.386	0.878
APINDSPEC	0.624	0.629	0.253	0.67	0.687	0.253
ACSIZE	2.938	3	0.944	3.213	3	1.004
INDEPAC	0.870	1	0.337	0.916	1	0.277
BDSIZE	5.569	5	1.707	6.235	6	2.125
BDINDP	0.687	0.714	0.157	0.717	0.75	0.157
SIZE (Ln)	62.712	15.457	231.063	1078.708	79.726	5937.323
SIZE (*$M*)	16.665	16.554	1.441	18.449	18.194	2.034
LOSS	0.891	1	0.312	0.514	1	0.5
ROA	−0.364	−0.188	0.482	−0.002	0.041	0.148
LEV	0.226	0.11	0.311	0.389	0.393	0.273
AGE	1.862	1.792	0.917			
CFO	−0.23	−0.136	0.262			
ZSCORE	−3.105	−3.629	3.891			
INVESTMENTS	0.364	0.292	0.285			
ISSDEBT	0.241	0	0.428			
EQUITYISS10	0.513	1	0.5			
RETURN	0.134	−0.167	0.98			
BETA	1.609	1.514	2.337			
VOLATILITY	0.215	0.184	0.123			
CFVOL				−2.75	−2.767	0.919
MB				2.148	1.403	2.888

Results reported in the above table are after winsorizing observations at the 1st and 99th percentiles of the signed value of discretionary accruals. Variable descriptions are in Table 1.

broken, 133 cases in which a company went from having no interlocks to having at least one interlock) in our discretionary accruals sample.[22]

Descriptive statistics for our sample companies are provided in Table 4. The incidence of first-time going-concern modifications (*FTGC*) in our sample of financially distressed companies (15.9 percent) is higher than the 12.9 percent reported

[22] In an untabulated analysis, we examined the antecedents of interlock formation, regressing an indicator of the formation of a new interlock against the lagged values of our test variables and the controls in Equations (2) and (3). These models generated pseudo-R^2 statistics of approximately 10 percent, with most explanatory power deriving from the lagged controls for other types of corporate interlocks. Neither *FTGC* nor *ABSDA* were significant predictors of subsequent interlock formation, ameliorating concerns regarding reverse causality.

by Blay and Geiger (2013), who used U.S. data prior to the global financial crisis, which increased the incidence of going-concern opinions through 2008–2010 (Xu, Carson, Fargher, and Zhang 2013). Absolute discretionary accruals have a mean (median) of 7.7 percent (5.1 percent) and standard deviation of 7.9 percent, suggesting that our model of discretionary accruals performs well relative to comparable studies using Australian data. Davidson, Goodwin-Stewart, and Kent (2005), for example, report mean absolute discretionary accruals of 15.6 percent with a standard deviation of 17.6 percent.

The mean level of an engagement audit partner's dependence on fees from other companies that share at least one common audit committee member (*NETWORKFEEDEP*) is 0.02 (see Table 4), but the mean for companies that actually have such interlocks is 0.178 (untabulated) for the audit opinion sample and 0.209 for the discretionary accruals sample. Approximately 6.9 percent (4.2 percent) of companies in the audit opinion (discretionary accruals) sample are measured as having a high level of network fee dependence (*NETWORKFEEDEP* $>$ 10 percent). The mean level of an engagement audit partner's dependence of fees from the focal company (*CLIENTFEEDEP*) is 0.237 for the audit opinion sample and 0.396 for the discretionary accruals sample.

An examination of our control variables in Table 4 reveals considerable differences in *SIZE* across our models, with our discretionary accruals sample exhibiting mean (median) size of $1.08 billion ($79.8 million) understandably having a higher concentration of large companies than for our performance-filtered audit opinion sample. The performance-filtering of the audit opinion sample also results in vastly weaker financial performance measures (*LOSS, ROA*) for this sample relative to the discretionary accruals sample. Approximately 87 percent (91 percent) of firms in our going-concern (discretionary accrual) sample have a majority of independent audit committees. Untabulated analysis finds that 90 percent (91 percent) of all audit committee members in our going-concern (discretionary accrual) sample are independent.

We also investigate differences in the mean level of our dependent and control variables, conditional on the existence of at least one audit committee-audit partner interlock. Table 5 reports a comparison of these mean values and tests of significance of mean differences between interlocked and other companies for each sample. Our going-concern opinion and absolute discretionary accruals audit-quality proxies each exhibit mean differences between interlocked and non-interlocked companies.

Panel A of Table 5 shows that in both our audit opinion and absolute discretionary accruals samples, several of our control variables have significantly different means across the interlocked and non-interlocked clients, highlighting the possible endogeneity threat if our linear models are imperfect. However, Panel B of Table 5 shows that for our propensity score matched sample, there are no significant differences in means across interlocked and control companies for any covariates, indicating the success of our matching scheme in generating a sample balanced on observable client and auditor attributes.

RESULTS

We organize our empirical analysis by the audit-quality proxy employed. All p-values reported are two-tailed. All models include untabulated year and industry fixed effects and standard errors adjusted for within-company clustering, as per Petersen (2009).[23] We calculated variance inflation factors (VIFs) for each regression. No VIF exceeded 5, indicating that there are no obvious concerns with multicollinearity in our models.

First-Time Going-Concern Opinion Results

Table 6 reports the results of our regressions using the incidence of first-time going-concern opinions as our audit-quality proxy. Columns (1) to (3) show our full sample logistic regressions of the incidence of first-time going-concern opinions against our networked client importance (fee dependence) measures. Both models are well specified, with pseudo-R^2 statistics of around 21 percent, and approximately half of the control variables are significant.

Column (1) of Table 6 reports results for our continuous measure of an auditor's dependence on fees from networked clients. The coefficient for our test variable (*NETWORKFEEDEP*) is negative and significant ($\beta = -3.8882$, p = 0.008), consistent with audit partners' fee dependence on networked clients reducing the incidence of first-time going-concern opinions for financially distressed clients, which may indicate impaired audit quality. The coefficients for our dichotomous measures of network fee dependence are reported in Columns (2) and (3). The incidences of any audit committee-audit partner interlocks for which network fee dependence exceeds 10 percent (*HIGHNETFEEDEP10:* $\beta = -0.8274$, p = 0.016) or 15 percent (*HIGHNETFEEDEP15:* $\beta = -1.1239$, p = 0.023) are also significantly negatively associated with likelihood of issuance of a first-time going-concern modification. In all three models, the audit partner's dependence on fees from the focal company is

[23] We also estimated our discretionary accrual regressions with client fixed effects. However, we note that the use of client fixed effect regressions is likely to be of low power when there is relatively little within-client variation in the test variable, as in our case. Regressions based on our full sample generated positive, but insignificant, coefficients for our test variables. However, fixed effect regressions based on a sample that excludes the first year of an auditor's tenure, when bonds with a client are likely to be relatively weak, generate significant positive coefficients for each of our test variables.

TABLE 5

Comparison of Means: Companies With and Without Audit Committee-Audit Partner Links

Panel A: Full Sample

	GC			ABSDA		
Variables	**Mean No AC-AP Interlocks (n = 1980)**	**Mean Companies at Least One AC-AP Interlock (n = 252)**	**Mean Diff.**	**Mean No AC-AP Interlocks (n = 4238)**	**Mean Companies at Least One AC-AP Interlock (n = 295)**	**Mean Diff.**
FTGC/ABSDA	0.163	0.131	0.032	0.076	0.085	−0.009**
AC-AFOnly_Lks	0.2	0.313	−0.113***	0.334	0.559	−0.225***
NonACDir-AFOnly_Lks	0.425	0.956	−0.531***	0.536	1.193	−0.658***
NonACDir-APOnly_Lks	0.174	0.754	−0.580***	0.1	0.776	−0.677***
ACOnly_Lks	0.68	0.409	0.272***	0.825	0.576	0.249***
CLIENTFEEDEP	0.251	0.126	0.125***	0.409	0.21	0.200***
FEERATIO	0.19	0.168	0.196***	0.238	0.229	0.009
BIG4	0.449	0.254	−0.063	0.652	0.502	0.151***
APTENURE	0.783	0.846	−0.640***	0.822	0.867	−0.045
APBUSY	1.713	2.353	0.008	1.342	1.983	−0.641***
APINDSPEC	0.625	0.618	0.022	0.674	0.619	0.055***
ACSIZE	2.943	2.893	0.051	3.211	3.234	−0.023
INDEPAC	0.873	0.845	0.027	0.917	0.908	0.008
BDSIZE	5.585	5.44	0.145	6.244	6.105	0.139
BDINDP	0.69	0.664	0.026**	0.718	0.705	0.013
SIZE (Ln)	16.688	16.49	0.197**	18.461	18.276	0.186
LOSS	0.888	0.913	−0.024	0.505	0.654	−0.150***
ROA	−0.367	−0.341	−0.026	0.001	−0.049	0.051***
LEV	0.233	0.171	0.062***	0.394	0.325	0.069***
AGE	1.885	1.683	0.202***			
CFO	−0.229	−0.238	0.009			
ZSCORE	−3.046	−3.571	0.525**			
INVESTMENTS	0.36	0.398	−0.038**			
ISSDEBT	0.249	0.175	0.075***			
EQUITYISS10	0.509	0.552	−0.043			
RETURN	0.128	0.18	−0.051			
BETA	1.59	1.757	−0.167			
VOLATILITY	0.215	0.215	−0.001			
CFVOL				−2.749	−2.753	0.003
MB				2.127	2.445	−0.317*

Panel B: Propensity Score Matched Sample

	GC Sample			ABSDA Sample		
Variables	**Mean No AC-AP Interlocks (n = 392)**	**Mean Companies at Least One AC-AP Interlock (n = 392)**	**Mean Diff.**	**Mean No AC-AP Interlocks (n = 231)**	**Mean Companies at Least One AC-AP Interlock (n = 231)**	**Mean Diff.**
FTGC/ABSDA	0.143	0.136	0.006	0.078	0.087	−0.009
AC-AFOnly_Lks	0.33	0.286	0.044	0.535	0.546	−0.011
NonACDir-AFOnly_Lks	0.772	0.905	−0.132	1.025	1.05	−0.025
NonACDir-APOnly_Lks	0.679	0.601	−0.079	0.628	0.621	0.007

(continued on next page)

TABLE 5 (continued)

	GC Sample			ABSDA Sample		
Variables	**Mean No AC-AP Interlocks (n = 392)**	**Mean Companies at Least One AC-AP Interlock (n = 392)**	**Mean Diff.**	**Mean No AC-AP Interlocks (n = 231)**	**Mean Companies at Least One AC-AP Interlock (n = 231)**	**Mean Diff.**
ACOnly_Lks	0.415	0.445	−0.03	0.613	0.596	0.018
CLIENTFEEDEP	0.116	0.128	−0.012	0.21	0.205	0.005
FEERATIO	0.157	0.162	−0.004	0.24	0.224	0.015
BIG4	0.254	0.25	0.004	0.489	0.496	−0.007
APTENURE	0.806	0.841	−0.036	0.827	0.859	−0.032
APBUSY	2.334	2.345	−0.011	2.02	1.995	0.026
APINDSPEC	0.639	0.634	0.005	0.613	0.612	0
ACSIZE	2.862	2.923	−0.061	3.234	3.223	0.011
INDEPAC	0.83	0.864	−0.033	0.943	0.911	0.032
BDSIZE	5.554	5.427	0.126	6.078	6.018	0.06
BDINDP	0.656	0.67	−0.014	0.705	0.705	0
SIZE (Ln)	16.486	16.557	−0.072	18.201	18.208	−0.008
LOSS	1.696	1.69	0.006	0.663	0.645	0.018
ROA	0.942	0.923	0.019	−0.046	−0.05	0.004
LEV	−0.375	−0.333	−0.042	0.338	0.32	0.017
AGE	0.17	0.166	0.004			
CFO	−0.244	−0.238	−0.006			
ZSCORE	−3.357	−3.646	0.29			
INVESTMENTS	0.425	0.382	0.043			
ISSDEBT	0.17	0.168	0.001			
EQUITYISS10	0.567	0.555	0.012			
RETURN	0.253	0.19	0.063			
BETA	1.88	1.763	0.116			
VOLATILITY	0.218	0.217	0.001			
CFVOL				−2.66	−2.707	0.046
MB				2.741	2.501	0.24

*, **, *** Indicate significance at 10 percent, 5 percent, and 1 percent, respectively, based on two-tailed tests.

positively associated with the likelihood of the issuance of a going-concern opinion (*CLIENTFEEDEP*), suggesting that the litigation and reputation risk effects dominate the any reduction in independence caused by reliance on the fees from a single client. However, further untabulated analysis revealed that this result may derive from mechanical correlation between *CLIENTFEEDEP* and partner busyness (*APBUSY*) rather than litigation risk. If *APBUSY* is omitted from the regression, then *CLIENTFEEDEP* is insignificant.

Columns (4) to (6) of Table 6 report the results for our propensity score matched sample regressions (223 companies with audit committee-audit partner interlocks, 223 matched control companies). These models are also reasonably well specified, with pseudo-R^2 statistics of around 30 percent. Of our control variables *FEERATIO, SIZE, CFO, INVESTMENTS,* and *RETURN* are significant in the second stage of each propensity score matched regression. All measures of audit partners' dependence of fees from other companies in an interlocked network are negative and significant (*NETWORKFEEDEP:* $\beta = -4.3839$, $p = 0.005$; *HIGHNETFEEDEP10:* $\beta = -0.8451$, $p = 0.054$; *HIGHNETFEEDEP15:* $\beta = -1.0577$, $p = 0.042$). *CLIENTFEEDEP* is not significant in any of our propensity score matched sample regressions.

Because there was a marked change in the incidence and nature of going-concern opinions during the global financial crisis (Xu et al. 2013), we reestimated each of our full sample and propensity score models excluding the 2008–2010 financial years. For this restricted sample (untabulated), the coefficients for our test variables remained negative and significant, most at stronger significance levels.

In summary, we find evidence that the engagement audit partner's dependence on fees received from companies interlocked with the focal company impairs audit quality.

TABLE 6

Regressions of First-Time Going-Concern Opinions against Network Fee Dependence Measures

	Full Sample			PSM Sample		
Variables	**(1) Continuous Measure of Network Fee Dependence**	**(2) High Network Fee Dependence (10%) Threshold**	**(3) High Network Fee Dependence (15%) Threshold**	**(4) Continuous Measure of Network Fee Dependence**	**(5) High Network Fee Dependence (10%) Threshold**	**(6) High Network Fee Dependence (15%) Threshold**
NETWORKFEEDEP	−3.8882***			−4.3839***		
	(0.008)			(0.005)		
HIGHNETFEEDEP		−0.8274**	−1.1239**		−0.8451*	−1.0557**
		(0.016)	(0.023)		(0.054)	(0.042)
LOWNETFEEDEP		0.3139	0.1348		0.3462	0.2051
		(0.359)	(0.643)		(0.391)	(0.583)
ACOnly_Lks	−0.1422	−0.1305	−0.1296	−0.6358	−0.6153	−0.6198
	(0.120)	(0.156)	(0.158)	(0.101)	(0.109)	(0.103)
CLIENTFEEDEP	0.9168**	0.9173**	0.9366**	2.1156	2.0135	2.0588
	(0.048)	(0.048)	(0.044)	(0.235)	(0.260)	(0.252)
BIG4	0.3482**	0.3690**	0.3574**	0.0912	0.1139	0.0442
	(0.023)	(0.016)	(0.019)	(0.836)	(0.789)	(0.918)
APTENURE	−0.2575**	−0.2541**	−0.2571**	0.1304	0.1377	0.1324
	(0.027)	(0.028)	(0.027)	(0.669)	(0.648)	(0.666)
APBUSY	0.2516**	0.2419**	0.2428**	0.2909	0.3124	0.2897
	(0.034)	(0.046)	(0.044)	(0.361)	(0.336)	(0.373)
APINDSPEC	−0.3346	−0.3389	−0.3696	−0.9051	−0.7586	−0.9541
	(0.379)	(0.373)	(0.333)	(0.411)	(0.498)	(0.396)
FEERATIO	−0.6122*	−0.6148*	−0.6247*	1.5129*	1.5125*	1.4875*
	(0.097)	(0.095)	(0.089)	(0.070)	(0.070)	(0.073)
ACSIZE	−0.0116	−0.0157	−0.0160	−0.0689	−0.0798	−0.0790
	(0.891)	(0.852)	(0.850)	(0.731)	(0.691)	(0.698)
INDEPAC	−0.0949	−0.1038	−0.1112	0.6431	0.6173	0.5796
	(0.666)	(0.637)	(0.613)	(0.254)	(0.284)	(0.306)
SIZE	−0.3256***	−0.3244***	−0.3232***	−0.5597**	−0.5313**	−0.5362***
	(0.000)	(0.000)	(0.000)	(0.010)	(0.012)	(0.010)
BDSIZE	0.1217***	0.1221***	0.1266***	−0.1495	−0.1442	−0.1254
	(0.005)	(0.005)	(0.004)	(0.254)	(0.264)	(0.333)
BDINDP	0.0867	0.1232	0.0979	−1.4348	−1.4570	−1.4185
	(0.853)	(0.793)	(0.834)	(0.249)	(0.258)	(0.270)
AGE	−0.1458*	−0.1423*	−0.1473*	0.2310	0.2550	0.2191
	(0.058)	(0.064)	(0.054)	(0.284)	(0.240)	(0.306)
LOSS	0.5846**	0.5944**	0.5918**	−0.1294	−0.0566	−0.1085
	(0.015)	(0.013)	(0.014)	(0.838)	(0.929)	(0.864)
ROA	−0.0983	−0.1101	−0.1009	−0.1261	−0.1927	−0.1493
	(0.717)	(0.693)	(0.713)	(0.831)	(0.758)	(0.809)
LEV	0.3428	0.3368	0.3203	−1.2730	−1.2843	−1.2962
	(0.401)	(0.415)	(0.428)	(0.193)	(0.248)	(0.205)
CFO	−1.7707***	−1.7916***	−1.7365***	−1.4592*	−1.5408*	−1.3544
	(0.000)	(0.000)	(0.000)	(0.098)	(0.096)	(0.131)
ZSCORE	0.0680	0.0665	0.0691	0.1338	0.1284	0.1336
	(0.142)	(0.161)	(0.133)	(0.126)	(0.168)	(0.136)
INVESTMENTS	−3.8345***	−3.8311***	−3.8046***	−3.2033***	−3.0800***	−2.9707***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ISSDEBT	0.0597	0.0702	0.0659	−0.0957	−0.0590	−0.1168
	(0.724)	(0.679)	(0.698)	(0.849)	(0.905)	(0.816)
ISSEQ	−0.3368**	−0.3338**	−0.3442**	0.2693	0.2576	0.2141
	(0.016)	(0.018)	(0.014)	(0.452)	(0.474)	(0.549)

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TABLE 6 (continued)

	Full Sample			PSM Sample		
Variables	**(1) Continuous Measure of Network Fee Dependence**	**(2) High Network Fee Dependence (10%) Threshold**	**(3) High Network Fee Dependence (15%) Threshold**	**(4) Continuous Measure of Network Fee Dependence**	**(5) High Network Fee Dependence (10%) Threshold**	**(6) High Network Fee Dependence (15%) Threshold**
RETURN	−0.3648***	−0.3635***	−0.3618***	−0.6639**	−0.6424**	−0.6462**
	(0.003)	(0.003)	(0.003)	(0.018)	(0.023)	(0.021)
BETA	−0.0288	−0.0293	−0.0292	−0.0396	−0.0449	−0.0400
	(0.379)	(0.377)	(0.379)	(0.620)	(0.579)	(0.624)
VOLATILITY	−0.2801	−0.3242	−0.2674	0.1873	−0.0680	0.2381
	(0.687)	(0.645)	(0.703)	(0.914)	(0.968)	(0.879)
Constant	3.8719***	3.7955***	3.8490***	11.1566***	10.1243***	10.5271***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Observations	2,232	2,232	2,232	446	446	446
Pseudo R^2	0.217	0.216	0.217	0.302	0.294	0.295

*, **, *** Indicate significance at 10 percent, 5 percent, and 1 percent, respectively, based on two-tailed tests.
All models include year and industry fixed effects and standard errors adjusted for within-company clustering. p-values are in parentheses.
Variable descriptions are in Table 1.

Discretionary Accruals Models

Table 7 reports the results of our tests of the association between our measures of networked client importance (fee dependence) and client absolute discretionary accruals. Our full sample regression results reported in Columns (1) to (3) of Table 7 are of reasonable fit (R^2 of just below 12 percent) and several control variables are significant (*BIG4, APINDSPEC, APBUSY, SIZE, BDSIZE, LOSS, ABSROA, CFVOL, LEV, MB*).[24] The audit partner's dependence on fees from the focal company is not significantly associated with the absolute value of discretionary accruals (*CLIENTFEEDEP*), suggesting that reliance on the fees from a single client does not impair auditor independence. Column (1) reports tests of the association between absolute discretionary accruals and our continuous measure of networked client importance (*NETWORKFEEDEP*). The coefficient for *NETWORKFEEDEP* is positive and significant ($\beta = 0.0292$; $p = 0.063$), suggesting that higher levels of dependence on fees from networked clients impair audit quality. Coefficients for our dichotomous test variables indicating network fee dependence in excess of 10 or 15 percent are also positive and significant, with a particularly strong effect reported for cases of network fee dependence exceeding 15 percent of an audit partner's total audit fee revenue ($\beta = 0.0142$, $p = 0.023$). These results suggest that networked client fee dependence resulting from audit committee-audit partner interlocks reduces audit quality.

The results our propensity score matched regressions are reported in Columns (4) through (6) of Table 7. Each of these models has greater explanatory power than our full sample results, with R^2s of approximately 15 percent. The coefficients for our test variables are each positive and marginally more significant (*NETWORKFEEDEP:* $\beta = 0.0454$, $p = 0.035$; *HIGHNETFEEDEP10:* $\beta = 0.0149$, $p = 0.065$; *HIGHNETFEEDEP15:* $\beta = 0.0208$, $p = 0.017$) than those reported in our full sample tests, further supporting the contention that the audit partner's dependence on fees from clients interlocked with the focal company reduces audit quality.

In summary, both our full sample and propensity score matched regressions provide support for the contention that audit partner dependence on fees from other companies in the network created by the existence of audit committee-audit partner interlocks erodes audit quality.

Additional Tests

Alternate Discretionary Accruals Tests

Because our control for client cash flow volatility causes significant sample attrition, likely to be biased in favor of relatively mature and healthy companies, we reestimated our absolute discretionary accruals tests excluding this variable

[24] Although we find significant positive coefficients for *BIG4* and *APINDSPEC,* suggesting that these indicators of audit quality are associated with inferior reporting quality, we note that these variables are likely endogenously determined (Lawrence et al. 2011; Godfrey and Hamilton 2005). Neither is significant in our propensity score matched regressions.

TABLE 7

Regressions of Absolute Discretionary Accruals against Network Fee Dependence Measures

	Full Sample			PSM Sample		
Variables	**(1) Continuous Measure of Network Fee Dependence**	**(2) High Network Fee Dependence (10%) Threshold**	**(3) High Network Fee Dependence (15%) Threshold**	**(4) Continuous Measure of Network Fee Dependence**	**(5) High Network Fee Dependence (10%) Threshold**	**(6) High Network Fee Dependence (15%) Threshold**
NETWORKFEEDEP	0.0292*			0.0454**		
	(0.063)			(0.035)		
HIGHNETFEEDEP		0.0097*	0.0142**		0.0149*	0.0208**
		(0.084)	(0.023)		(0.065)	(0.017)
LOWNETFEEDEP		−0.0008	−0.0031		0.0005	−0.0018
		(0.915)	(0.637)		(0.963)	(0.835)
ACOnly_Lks	−0.0021	−0.0022	−0.0022	−0.0039	−0.0037	−0.0040
	(0.126)	(0.125)	(0.123)	(0.444)	(0.459)	(0.434)
CLIENTFEEDEP	−0.0010	−0.0014	−0.0010	−0.0001	−0.0068	−0.0020
	(0.899)	(0.854)	(0.894)	(0.997)	(0.812)	(0.944)
FEERATIO	0.0037	0.0039	0.0040	0.0186	0.0198	0.0213
	(0.522)	(0.501)	(0.487)	(0.318)	(0.291)	(0.255)
BIG4	0.0080***	0.0080***	0.0079***	−0.0034	−0.0033	−0.0040
	(0.004)	(0.004)	(0.004)	(0.709)	(0.717)	(0.661)
APTENURE	−0.0006	−0.0006	−0.0006	0.0042	0.0042	0.0041
	(0.750)	(0.748)	(0.749)	(0.453)	(0.453)	(0.463)
APBUSY	0.0060***	0.0058***	0.0060***	0.0046	0.0029	0.0044
	(0.006)	(0.008)	(0.006)	(0.471)	(0.642)	(0.488)
APINDSPEC	0.0208***	0.0207***	0.0208***	0.0011	0.0018	0.0021
	(0.005)	(0.005)	(0.005)	(0.960)	(0.933)	(0.924)
ACSIZE	−0.0023*	−0.0023*	−0.0023*	0.0047	0.0045	0.0046
	(0.086)	(0.085)	(0.087)	(0.257)	(0.278)	(0.268)
INDEPAC	−0.0011	−0.0010	−0.0011	−0.0231	−0.0221	−0.0231
	(0.816)	(0.827)	(0.817)	(0.135)	(0.154)	(0.136)
SIZE	−0.0043***	−0.0043***	−0.0043***	0.0015	0.0015	0.0015
	(0.000)	(0.000)	(0.000)	(0.639)	(0.639)	(0.643)
BDSIZE	0.0014*	0.0014*	0.0014*	−0.0033	−0.0031	−0.0033
	(0.057)	(0.053)	(0.056)	(0.173)	(0.210)	(0.181)
BDINDP	0.0013	0.0012	0.0014	0.0304	0.0292	0.0316
	(0.880)	(0.883)	(0.863)	(0.260)	(0.280)	(0.241)
LOSS	0.0077**	0.0078**	0.0077**	−0.0056	−0.0056	−0.0060
	(0.013)	(0.012)	(0.013)	(0.604)	(0.603)	(0.579)
ROA	0.0347***	0.0347***	0.0347***	0.0032	0.0025	0.0031
	(0.001)	(0.001)	(0.001)	(0.915)	(0.934)	(0.918)
CFVOL	0.0206***	0.0206***	0.0206***	0.0253***	0.0256***	0.0257***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV	0.0221***	0.0219***	0.0220***	−0.0086	−0.0103	−0.0094
	(0.000)	(0.000)	(0.000)	(0.549)	(0.474)	(0.511)
MB	0.0007*	0.0007*	0.0007*	−0.0003	−0.0002	−0.0003
	(0.059)	(0.059)	(0.060)	(0.790)	(0.831)	(0.773)
Constant	0.1694***	0.1697***	0.1687***	0.1469**	0.1503**	0.1489**
	(0.000)	(0.000)	(0.000)	(0.013)	(0.011)	(0.012)
Observations	4,533	4,533	4,533	564	564	564
R^2	0.116	0.115	0.116	0.149	0.148	0.153

*, **, *** Indicate significance at 10 percent, 5 percent, and 1 percent, respectively, based on two-tailed tests.
All models include year and industry fixed effects and standard errors adjusted for within-company clustering. p-values are in parentheses. Results reported in the above table are after winsorizing observations at the 1st and 99th percentiles of the signed value of discretionary accruals.
Variable descriptions are in Table 1.

(untabulated). These models have much lower explanatory power (R^2s of approximately 7.5–10.0 percent) than our main models. All test variables remained positive and significant, generally at slightly lower confidence levels.

To investigate whether the reported results concerning the relationship between absolute discretionary accruals and our measures of networked client importance are dominated by discretionary accruals of either sign, we reestimated Equation (3) using signed discretionary accruals and substituting signed ROA for absolute ROA in our vector of controls. It is arguable that auditors have stronger incentives to discipline increasing earnings management (positive discretionary accruals). We find no significant association (untabulated) between signed discretionary accruals and our measures of networked clients' fee dependence.

Ordinal Regressions of Going-Concern Audit Opinions

Following the method adopted by Chen et al. (2010) and Chi et al. (2012), we reestimated our models of audit opinion using ordered logit regression where the dependent variable equals 0 if the audit opinion was not modified for going-concern reasons, 1 if the audit opinion contained an "emphasis of matter" paragraph relating to going-concern issues, or 2 if the audit opinion included an "except for" paragraph relating to going-concern issues. In both our full sample and propensity score matched models (untabulated), our test variables remained negative and significant at similar or stronger confidence levels.

Alternate Measure of Modified Audit Opinions

Following Craswell et al. (2002), Li (2009), Reichelt and Wang (2009), Chen et al. (2010), and Chi et al. (2012), we reestimated our audit opinion model using the incidence of any modified opinion, rather than the incidence of going-concern opinions, as the dependent variable.[25] Our full sample regression and propensity score matched regressions (untabulated) generated results similar to our going-concern models, with slightly lower levels of statistical significance for test variables.

Sample Restriction by Circumstances Surrounding Interlock Formation

To examine whether our results differ according to the circumstances surrounding the initial formation of an audit committee-audit partner interlock, we reestimated our regressions based on samples that excluded either (1) interlocks for which there was a change in audit firm at the inception of the interlock, or (2) interlocks for there was no change in audit firm at the inception of the interlock. While some of our test variables decreased in significance after applying these sample restrictions, the tenor of our results was similar across subsamples.[26]

DISCUSSION AND CONCLUSIONS

Our paper examines the relationship between client importance and audit quality by considering client importance at the audit partner level and the effects of the fee dependence of the network of clients created by audit committee member-audit partner interlocks. We examine the associations between networked clients' fee dependence created by audit committee member-audit partner interlocks and audit quality. Audit quality was measured by the likelihood of the issuance of a first-time going-concern modified audit opinion and absolute discretionary accruals, which is expected to be correlated with the client's earnings management behavior. Our test variables include measures of the network fee dependence of audit committee member-audit partner interlocks. Network fee dependence measures the importance to the audit partner of audit fees received from companies with which the client has an audit committee-audit partner interlock.

Using both full sample and propensity score matched regressions, we find that network fee dependence is significantly associated with lower audit quality as measured by each of our audit-quality proxies, suggesting that that the economic dependence created by such links may reduce the likelihood of an auditor issuing a first-time going-concern opinion, and may increase the extent to which reported earnings are biased away from the level at which a neutral application of GAAP would precipitate. Our results are robust to alternative measures of fee dependence and alternative samples. Collectively, our tests provide support for the contention that audit partner dependence on fees from other companies in the network created by audit committee member-audit partner interlocks erodes audit quality in economically significant client firms.

We contribute to the literature that examines the relation between client importance and audit quality by considering client importance at the audit partner level, and the effects of the fee dependence of the network of clients created by audit committee

[25] The term "modified" is used here to refer to any type of other-than-unqualified audit opinion.

[26] As an additional test, we replaced our test variables with one indicating that a firm had previously been a member of at least one audit committee-audit partner interlock, but was no longer a member of such a relationship. The historical existence of interlocks is not significantly associated with either of our audit-quality proxies.

member-audit partner interlocks. Although other studies have examined the effects of client importance on audit quality at the audit firm, audit office, and audit partner level, no prior research has examined the effect for a group of clients that are linked to the audit partner. Our study uses the actual audit fee attributable to a single, discretely identified engagement partner. In addition, we extend the literature by not only considering the economic importance to the auditor of the client company to which the audit report pertains (the focal company), but also the economic importance of the group of clients in the network created by the audit committee member-audit partner interlocks.

We also contribute to the scant literature that examines the effects of audit committee member-auditor interlocking on earnings/audit quality. Distinct from Chen et al. (2014), who find a positive association between the extent of audit committee director-audit firm interlocking and earnings response coefficients, we demonstrate the potential threats to audit quality arising at the partner level and how these threats may relate to fee dependence.

The results of our study should be important to academics, regulators, company directors, and the auditing profession. Relationships between an auditor and the client have the capacity to impair auditor independence, which may have a negative impact on financial reporting quality. Thus, research that examines issues that have the potential to impair audit quality should be important to regulators, company directors, and the auditing profession. Both the academic literature and regulatory pronouncements indicate that audit committees play a critical role in ensuring auditor independence and audit quality (Chen et al. 2014). Therefore, it is important to consider the potential impact of the auditor's economic dependence created by interlocking on audit quality.

This study has the potential to inform policymakers, corporate boards, and academic researchers on the need to reconsider the importance of the composition of audit committees. The presence of interlocking relationships between audit committee members and audit partners may impair auditor independence and, thus, the quality of audits and the resulting financial statements being audited. These findings may inform future regulatory initiatives to discourage or prevent companies from appointing an audit committee member of a company with the same audit partner, or not allow audit partners to engage clients that have an audit committee member in common with an existing client. Alternatively, the results may support a future move to limit the percentage of audit fees generated by a partner from networked clients resulting from audit committee-audit partner interlocks. For quality control purposes, audit firms should provide closer monitoring of audit clients where audit committee member-audit partner interlocks create the potential for economic dependence on the network clients.

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APPENDIX A

Illustration of Audit Committee-Audit Partner Interlock Measures

Co.	Audit Committee Members	Audit Partner	Audit Fees	*AnyAC-AP_Lk*	*AC-AP_LkFms*	*NETWORK-FEEDEP**	*HIGHNET-FEEDEP10*	*HIGHNET-FEEDEP15*
1.	A,B,C,D,H	P	$80,000	1	3	17%	1	1
2.	A,B,C,G	P	$50,000	1	2	16%	1	1
3.	A,E,F	P	$80,000	1	2	13%	1	0
4.	D,H	P	$40,000	1	1	8%	0	0
5.	A,B,C	Q	$50,000	0	0	0%	0	0

* Audit partner P's annual total audit fee revenue is $1,000,000.

Variable Definitions:

AnyAC-AP_Lks = dichotomous variable indicating that the focal company has at least one common audit committee member with another company that has the same audit partner. In the example above, Companies 1, 2, 3, and 4 share at least one common audit committee member with another company that has the same audit partner (Audit Partner P). Company 5 has a different audit partner and, thus, has zero audit committee-audit partner interlocks regardless of measurement applied. This is the dependent variable in the first stage of our propensity score matched models;

AC-AP_LksFms = the number of other companies with which the focal company has at least one common audit committee member and has the same audit partner. Company 1's audit committee members sit on the audit committees of three other companies audited by the same partner (Companies 2, 3, and 4), and hence *AC-AP_LksFms* = 3. This variable is only used in our descriptive analysis of the incidence of interlocks;

NETWORKFEEDEP = the proportion of an audit partner's total audit fee income (including NAS fees) that derives from companies with which the focal company shares at least one common audit committee member (this measure excludes fee paid by the focal company, the dependence on which is controlled separately in our regressions). *NETWORKFEEDEP* for Company 1 equals the total audit fees across the companies with which this company shares a common audit committee member and audit partner (Companies 2, 3, and 4) divided by Audit Partner P's total annual audit fee revenue ($1,000,000) = ($50,000 + $80,000 + $40,000)/$1,000,000 = 17 percent. For Company 2, which shares a common audit partner and audit committee member with Companies 1 and 3, *NETWORKFEEDEP* = ($80,000 + $80,000)/$1,000,000 = 16 percent; and

HIGHNETFEEDEP = a dichotomous variable indicating the existence of audit committee-audit partner interlocks for which *NETWORKFEEDEP* > a given threshold. Companies 1, 2, and 3 exceed the 10 percent threshold; therefore, *HIGHNETFEEDEP* equals 1 for these companies. Only Companies 1 and 2 exceed the 15 percent threshold and, thus, only these companies have *HIGHNETFEEDEP* equal to 1 under this measure.