



Shared auditors in mergers and acquisitions[☆]



Dan S. Dhaliwal^{a,b,*}, Phillip T. Lamoreaux^c, Lubomir P. Litov^d,
Jordan B. Neyland^{e,f}

^a University of Arizona, United States

^b Korea University Business School, Korea

^c Arizona State University, United States

^d University of Oklahoma, United States

^e University of Melbourne, Australia

^f Financial Research Network (FIRN), Australia

ARTICLE INFO

Article history:

Received 19 April 2013

Received in revised form

22 January 2015

Accepted 26 January 2015

Available online 12 February 2015

JEL classifications:

G34

M41

M49

Keywords:

Auditors

Shared auditors

Mergers and acquisitions

Information asymmetry

ABSTRACT

We examine the impact of shared auditors, defined as audit firms that provide audit services to a target and its acquirer firm prior to an acquisition, on transaction outcomes. We find shared auditors are observed in nearly a quarter of all public acquisitions and targets are more likely to receive a bid from a firm that has the same auditor. Moreover, these shared auditor deals are associated with significantly lower deal premiums, lower target event returns, higher bidder event returns, and higher deal completion rates. These results are driven by bids in which targets and acquirers share the same practice office of an audit firm and in which the target is small. Overall, our evidence suggests that bidders benefit from sharing an auditor with the target. Our results are robust to controls for alternative explanations and for selection bias in the shared-auditor effect.

© 2015 Elsevier B.V. All rights reserved.

1. Introduction

We examine acquisition outcomes when the same auditor audits the financial statements of both a bidder and a target firm prior to an acquisition. We hypothesize that shared auditors facilitate the flow of information between bidders and targets, and that the benefits of such mitigated information asymmetry accrue primarily to the acquiring firm.

External auditors have unique access to senior executives, participate in audit committee meetings, and have access to board meeting minutes and general information about a firm in the conduct of their audits. This access to senior executives combined with information gathered during an audit provides auditors with an opportunity to discuss strategic initiatives with their clients including, among others, the acquisition or disposition of assets. Communication about such initiatives may be in the form of “soft talk”. Because auditors contract with a variety of companies, auditors have the potential to

[☆] We thank Anup Agrawal, Gennaro Bernile, Robert Bruner, Matt Ege, D.J. Fairhurst, Kathleen Kahle, Hayden Kane, Sandy Klasa, Chris Lamoureux, Hennock Louis, Øyvind Norli, Matt Serfling, Richard Sias, Jared Stanfield, Mark Trombley, and workshop participants at the University of Melbourne for helpful thoughts and comments. We are especially thankful to John Core (the Editor) and Mark DeFond (the Reviewer) for their insightful comments that helped us greatly improve the paper. Lastly, we thank Mike Mowchan for his research assistance, and our respective universities for research funding.

* Corresponding author. Tel.: +1 520 621 2146.

E-mail addresses: dhaliwal@email.arizona.edu (D.S. Dhaliwal), Phillip.Lamoreaux@asu.edu (P.T. Lamoreaux), lubomir.p.litov-1@ou.edu (L.P. Litov), jordan.neyland@unimelb.edu.au (J.B. Neyland).

become information intermediaries between prospective targets and acquirers, whether intentional or otherwise. As shared auditors are incentivized to align with the interests of larger clients, we anticipate a potential bias in favor of acquisitive clients over target clients. Hence, bidders that share an audit firm with a potential target could have an information advantage relative to others in the process of bidding, and we anticipate that this advantage will manifest itself in an increased likelihood of submitting a bid for a target.

The impact of shared auditors likely extends beyond the point of bidding and target selection. If shared-auditor bidders have an informational advantage relative to competing bidders, bidders with shared auditors can leverage this advantage into a better bargaining position with the target. As other bidders have less information, they have less incentive to bid, thus reducing bid competition. With lower bid competition, an acquirer with a shared auditor has the opportunity to negotiate a more favorable price for the target firm, thus reducing premiums paid.

The opportunity for a shared auditor to become an information intermediary is likely increased if an acquirer and target contract with the same auditor office. This is due to a higher likelihood of overlap of audit personnel on client engagement teams and increased informal contact between audit teams of the target and acquirer, i.e., “water cooler” talk among auditors in the same practice office. Therefore, we expect the shared auditor effect on deal outcomes to be more pronounced if the bidder and acquirer contract with the same auditor practice office.

We anticipate that shared auditors may favor acquisitive clients over targets for at least two reasons. First, an auditor's long-term incentives (even within an auditor's practice office) are more closely aligned with those of their acquisitive clients. Our intuition follows that applied to shared investment bank advisors who are more likely to favor acquiring firms when representing both a target and an acquirer in the same deal (Agrawal et al., 2013). As audit firms and their practice offices have an incentive to foster and maintain ongoing relationships with larger, more acquisitive clients, we anticipate shared information at the auditor office level will benefit acquirers more so than targets. Second, with a shared auditor, target auditors may be more forthcoming in the due diligence process, as target auditors may be more willing to disclose information to co-workers rather than auditors from another audit firm, especially when the information is concentrated within an auditor's practice. We hence anticipate that bidders that share auditor offices with their targets will gain superior acquisition-related information about their targets and experience lower bid competition for those targets. Both effects would yield favorable transaction outcomes for acquirers.

As sharing confidential information about target clients with acquirer clients appears to be a violation of conflict of interest rules, we expect that higher (lower) quality auditors would be less (more) likely to act as information intermediaries in merger and acquisition deals. Further, as the Sarbanes–Oxley Act of 2002 (SOX) strengthened auditor independence rules and increased awareness of auditor independence concerns, we expect the shared-auditor effect on M&A deals to be stronger prior to SOX.

Using data on public transactions from 1985 to 2010, we examine the impact of shared auditors on the outcomes of all acquisitions and the subset of acquisitions between targets and acquirers who are audited by Big-N audit firms. We find that over this period approximately 26% of all acquisitions among clients of Big-N audit firms have a shared auditor. The substantial percentage of deals with shared auditors suggests that auditors facilitate acquisitions among client firms. We also find that deals with shared auditors have fewer bidders relative to deals without, consistent with increased bargaining power for acquirers with shared auditors.

We further find that premiums paid by acquirers in shared-auditor deals are nearly 4.2% lower than deals in which the target and acquirer have different auditors. This finding is economically significant as it represents a reduction of 9.2% in the average premium of 45.8%, or an average discount of \$36 million U.S. dollars in the purchase price.¹ We also find that average announcement day returns are 1.80% lower for targets and 0.70% higher for acquirers in deals with shared auditors.

We find that this shared-auditor effect on premiums, target returns, and deal completion rates is driven by deals with shared-auditor offices as the shared-auditor effect increases nearly twofold (as compared to magnitudes noted above) if the target and the acquirer are audited by the same auditor practice office.² This result is consistent with our expectation as the opportunity to transfer information in violation of conflict of interest rules is stronger within an auditor's practice office, likely due to the higher probability of auditor personnel overlap and opportunity for “water cooler” talk. These results are robust to controls for geographic distance between the target and acquirer, for the involvement of shared directors or of shared advisors, as well as for other control variables that prior studies have shown to influence acquisition outcomes (Uysal et al., 2008; Agrawal et al., 2013; Cai and Sevilir, 2012). These results are also robust to concerns of endogeneity arising from the potential endogenous choice of an auditor by the target and acquirer.

We next examine whether this shared-auditor effect is less pronounced for auditors that are anticipated to be of higher quality. We measure auditor quality with two proxies following prior literature (see DeFond and Zhang, 2014, for an extensive review). First, we start with the size of the target. We expect auditors would be more likely to cater to larger target clients in the transaction process relative to smaller target clients as prior research has shown that auditors provide lower audit quality to smaller clients (Reynolds and Francis, 2000). Correspondingly, we anticipate shared auditors will be less

¹ We calculate the premium reduction of 9.2% as the ratio of negative 4.2% and 45.8%. The \$36 million purchase price discount is calculated using the average transaction value (i.e., \$1.24 billion), a 45.8% premium and the premium reduction of 4.2%.

² Our analysis at the audit practice office level is limited to the period 1994–2010 due to data availability on the location of the auditor practice offices. We hand collect data on auditor practices offices from publicly available SEC filings for shared auditor deals for the period 1994–2001. For 2002–2010 we rely on data from Audit Analytics to identify auditor practice offices.

likely to favor an acquirer of a large target relative to a small target as large target managers are more likely to take prominent roles at the acquirer following the acquisition. Therefore, we expect the shared auditor effect to be less pronounced for acquisitions of larger targets. Second, as prior literature suggests longer tenured auditors provide higher quality audits (e.g. Myers et al., 2003), we anticipate longer tenured auditors will be less likely to favor acquirers at the expense of target shareholders.

We find the shared-auditor effect on deal outcomes is concentrated in deals with smaller targets consistent with shared auditors being less willing to cater to acquirers of larger targets. We also find that longer tenured auditors appear less likely to cater to acquirers at the expense of target shareholders. Again, these results are robust to controls for geographic proximity, the presence of shared directors, and the presence of shared advisors. Lastly, we find that the shared-auditor effect is stronger in the pre-SOX period relative to the post-SOX period. However, subsequent to SOX, deals with shared auditor's offices still reduce deal premiums and target announcement returns in the subsample of deals within the Big-N. We interpret these findings to suggest that the impact of shared auditors (offices) on transaction outcomes is reduced, but not eliminated, with the passage of SOX.

Our study makes three contributions. First, we provide evidence that acquirers benefit from sharing an auditor's office with a target, largely at the expense of target shareholders, and this result appears concentrated in acquisitions of smaller target clients. Therefore, our result suggests that auditors frequently violate their duty to put the interests of their clients ahead of their own in what appears to be a failure to protect confidential client information within their practice offices.³ Consequently, while shared auditors may aid in deal identification, target shareholders appear to be harmed in such deals. Therefore, these results suggest necessary changes in audit firm policies to safeguard confidential client information within practice offices. Further, audit clients should be aware of the risk of information leakage within auditor's practice offices.

This study contributes to the literature by providing evidence consistent with violations of conflict of interest rules by auditors that benefit one client at the expense of another. Prior research and regulator concerns regarding auditor's conflicts of interests focus on an auditor's independence from a client and the effect of an independence breach on the quality of that client's audit. In contrast, our study documents a novel conflict of interest as it relates to the auditor's client portfolio and suggests auditors benefit acquisitive clients at the expense of target clients. The effect on audit quality of such clients is unexamined in our work and is left for future research.⁴

Second, our results also add to prior studies that show that auditors impact their clients beyond the scope of the auditing relationship (e.g. Louis, 2005; Beatty, 1989). While prior work has exclusively focused on the effect of audit firm size (i.e. Big-N vs. non-Big-N) on client outcomes, our findings shed light on the effect of shared auditors (offices) within the group of Big-N auditors and their impact on client M&A outcomes.

Third, by providing evidence that shared auditor offices impact the acquisition process and deal outcomes, this study contributes to prior literature on information asymmetry and the form of payment, the probability of receiving a bid, the contractual provisions in merger agreements, and the price reactions to merger and acquisition announcements. This study also contributes to the literature on shared intermediaries and their role in reducing information asymmetry in the acquisition process.⁵ The identified shared-auditor practice office effect on acquisition outcomes is one potential mechanism to partially explain the geographic proximity effect on acquisition outcomes found in prior studies (e.g. Uysal et al., 2008).

Our study complements a concurrent paper by Cai et al. (2014) who also examine the effect of shared auditors on acquisitions. Our study examines an auditor's conflict of interest in shared auditor transactions, while that study examines overall acquisition quality of shared auditor deals. Cai et al. (2014) suggest that shared auditors reduce uncertainty in the deal process which results in higher quality acquisitions. Our results suggest that this benefit of uncertainty reduction accrues to the acquiring firm and that this benefit is driven by deals that involve shared auditor offices. As a caveat, our study examines all acquisitions with greater than 50% change in control, while Cai et al. (2014) examine only acquisitions with a 100% change in control. Therefore, given the differences in sample criteria, caution should be taken in making direct comparisons of the results of these two studies. However both studies, while using differing sample selection criteria, suggest that shared auditors impact target identification and audit client M&A outcomes which is outside the scope of an auditor–client relationship.

The remainder of the paper is organized as follows. Section 2 discusses prior literature and hypothesis development. Section 3 describes our data, including statistics on the probability of a shared-auditor bid. Section 4 provides our empirical results on the effect of shared auditors on acquisition outcomes. Section 5 provides supplementary analysis of the effect of SOX on the relation between shared auditors and acquisition outcomes. Section 6 addresses supplementary selection concerns in the multivariate analysis. Section 7 concludes.

³ The AICPA Code of Professional Conduct (Section 301) states that “A member in public practice shall not disclose any confidential client information without the specific consent of the client.” While auditors may be acting to connect targets with acquirers (perhaps with their clients' knowledge), they may unintentionally bias the information to the benefit of the acquiring firm or be more “forthright” with the acquirer given the long term incentives of auditors to maintain a client relationship with large acquisitive clients.

⁴ For example, prior research has examined the effect of non-audit services (e.g., DeFond et al., 2002; Ashbaugh et al., 2003; Simunic, 1984), low audit fees and fee dependence (e.g. DeAngelo, 1981; Craswell et al., 2002), or auditor–client relationships (e.g., Ye et al., 2011) on auditor's independence from a specific client. In contrast, our study documents a conflict of interest that manifests itself through the auditor's portfolio of clients.

⁵ See for examples: Agrawal et al. (2013), Bizjak et al. (2009), Cai and Sevilir (2012), and Stuart and Yim (2010).

2. Prior literature and hypothesis development

2.1. Prior related literature

Prior research shows that auditors influence merger and acquisition activity, even though they are not specifically contracted to advise on acquisition decisions, unlike investment banks or transaction attorneys. Specifically, smaller auditors appear to provide greater service and advice to their acquisitive clients, and this advice translates into higher acquirer announcement date returns (Louis, 2005). Also, Big-N auditors of targets are associated with a higher likelihood of a firm being acquired, higher bidder announcement returns and premiums paid, and lower target announcement returns (Bugeja, 2011; Niemi et al., 2012; Xie et al., 2013). For private targets, valuation multiples are higher if they are audited by a Big-4 auditor (De Franco et al., 2011).

These prior studies consistently use auditor size (i.e., the separation between Big-N and non-Big-N auditors) to examine the effect of auditors on acquisition outcomes. In contrast, in this paper we focus on a complementary characteristic of audit firms – the case in which the audit firm has been separately contracted by both the target and acquirer for audit services – and its effect on deal outcomes. Importantly, such focus permits us to exploit the heterogeneity in auditor choice between target and acquirer *within* the group of Big-N-only acquisitions, heterogeneity that has been previously unexamined in the merger and acquisition setting.

Another literature focuses on the impact of shared advisors in the acquisition process. Agrawal et al. (2013) show that deal outcomes favor acquiring firms and disfavor target firms in transactions in which both parties contract with the same investment advisor. The authors suggest that a likely cause for the observed effects is that a shared advisor anticipates future fees from the acquirer, but does not anticipate such future income from the target. Prior literature also finds that acquirers have higher announcement returns and pay lower premiums if a director is on the board of both an acquirer and target, which suggests that shared directors influence deal outcomes by sharing acquisition-relevant information that favors the acquiring firm (Cai and Sevilir, 2012). Overall, this literature shows that shared intermediaries can mitigate information asymmetry between the parties and can influence acquisition outcomes.

2.2. Hypothesis development

In the conduct of an audit, auditors have frequent confidential communications with senior management alongside access to material private information about current corporate performance. Furthermore, auditors review board meeting minutes, participate in audit committee meetings, and gain an overall understanding of the condition and state of the business during an audit. Auditors are also required to evaluate the company's ability to continue as a going concern, which entails an evaluation of anticipated future cash flows and operations for the company. Further, auditors assess the intended future use of assets when testing valuation assertions in the financial statements. Although auditors are limited on the services they can provide to audit clients for a fee, they are still incentivized to provide value to the client beyond the scope of the audit to retain the client and associated fees.

One way an auditor can create value is by providing information that is beneficial to management's overall information set.⁶ To the extent that clients of an auditor are looking to acquire or dispose of corporate assets, this information may be shared in a relatively benign manner within the auditor's network of clients.⁷ In the extreme, an individual audit partner may have a pair of clients that are correspondingly looking to dispose and to acquire assets, in which case it would appear infeasible for the auditor to not share confidential client information. If shared auditors provide information that helps bidder or target clients identify potential acquisition opportunities and reduce information asymmetry, we expect that shared auditors increase the probability of an acquirer making a bid. We state our first formal hypothesis below.

Hypothesis 1. Shared auditors increase the probability of a firm receiving a bid.

Through the due diligence process the acquirer validates the offer price and the value of the target's assets (Skaife and Wangerin, 2013). This process includes gathering non-public information from the target to reduce information risk and to reduce the risk of overpaying or otherwise entering into an unfavorable transaction.⁸ We anticipate that a shared auditor lowers information risk and improves acquisition outcomes for acquiring firms. There are several reasons for such anticipated effect. If shared-auditor bidders have an informational advantage relative to other competing bidders, the

⁶ In a presentation to the Public Company Accounting Oversight Board, Richard Breeden, former chairman of the Securities and Exchange Commission, cited a number of reasons companies and audit committees would limit their choice of auditor. His cited reasons involve exclusion of the auditor of a firm's principal competitor, potential hostile acquirers, and companies developing rival technologies. All of these reasons for companies to limit auditor choice center on the risk of information sharing within an audit firm and provide anecdotal evidence that regulators are aware of the potential information transfer within audit firms' client portfolios (Breeden, 2012).

⁷ We note that auditors have strict independence rules that prevent them from acting in a management capacity, sharing confidential client information with other parties without client consent, or acting in a role beyond that of an assurance provider. However, auditors can act in an advisory capacity without violating independence rules. For example, AICPA independence standards state that auditor independence would not be impaired in the event auditors participate in "transaction negotiations in an advisory capacity". See AICPA ET Section 101.

⁸ Information risk is comprised of information asymmetry and information uncertainty about future cash flows (Lambert et al., 2007; Wangerin, 2012).

former can leverage this advantage into a better bargaining position with the target. As other potential bidders have less information, they are less likely to bid, thus reducing bid competition. With lower bid competition, an acquirer with a shared auditor has the opportunity to negotiate a more favorable price for the target firm, thus reducing premiums.

Given the multi-year nature of auditor–client relationships, auditors of target firms may prefer acquisition bids to be withdrawn rather than succeed as the acquisition of a target client results in the loss of future fees. To the contrary, auditors of acquirer firms have incentives for a client deal to complete, as the acquisition of a target will increase the size of the acquiring firm, thereby increasing the reputation of the auditor for auditing larger firms and consequently incrementally increasing audit fees.⁹

In a setting in which both target and acquirer contract with the same auditor prior to an acquisition, a shared auditor is likely to favor the acquiring client at the expense of the target client, to foster an ongoing relationship with the surviving client after the acquisition. This is consistent with the argument in [Agrawal et al. \(2013\)](#) that shared advisors appear to favor acquiring clients in an acquisition. Further, target auditors may be more willing to share information about the target's assets and liabilities when they audit both target and acquirer.¹⁰ Such increased willingness to share information coupled with incentives to favor the acquiring firm would increase the informational advantage of the acquirer.¹¹ Therefore, we expect acquisition outcomes with shared auditors to favor acquiring firms. We formally state our second hypothesis as follows.

Hypothesis 2. Shared-auditor deals are more favorable to acquirers (as compared to targets) than non-shared-auditor deals.

Audit firms are organized into local practice offices, and prior research has shown that individual auditor practice offices have a significant impact on client outcomes.¹² More importantly, the auditor practice office is where information about clients is concentrated, the auditor network is strongest, and the opportunity to share information about clients is likely highest.¹³ Further, local practice offices have a greater likelihood of overlapping personnel assigned to the audits of targets and acquirers, which further facilitates the concentration and potential dissemination of information. Therefore, we expect the impact of shared auditors on the probability of receiving a bid (i.e., [Hypothesis 1](#)) and on acquisition outcomes (i.e., [Hypothesis 2](#)) to be stronger when both target and acquirer contract with the same practice office of the auditor. This leads us to our third hypothesis.

Hypothesis 3. The anticipated effects (as discussed in [Hypotheses 1 and 2](#)) of shared auditors in mergers and acquisitions are more pronounced when targets and acquirers contract with the same practice office of an audit firm.

If outcomes of shared-auditor deals favor the acquirer, then this would appear consistent with a violation of conflict of interest rules by the auditor acting in favor of the acquiring client at the expense of target shareholders. *ex ante*, we would expect lower (higher) quality auditors to be more (less) likely to engage in behavior consistent with a potential conflict of interest, or a potential violation of auditor independence standards. Therefore, we anticipate the impact of shared auditors on M&A outcomes to be more (less) pronounced when the auditor is expected to be of lower (higher) quality. Our fourth hypothesis is stated as follows.

Hypothesis 4. The effect of shared auditors on deal outcomes is more pronounced when targets and acquirers contract with lower quality auditors relative to higher quality auditors.

Lastly, the Sarbanes–Oxley Act of 2002 (SOX) reduced the set of services auditors are allowed to provide for a fee, and the events leading to the passage of SOX put a renewed focus on auditor independence concerns. Therefore, if sharing an auditor leads to a conflict of interest rules violation, we would expect the merger outcomes to be less favorable to acquirers after SOX was enacted relative to the period before the enactment. Our final hypothesis is stated as follows.

Hypothesis 5. The effect of shared auditors on merger outcomes is less pronounced post-SOX enactment.

3. Data and summary statistics

3.1. Data

We obtain bids from Securities Data Corporation's Mergers and Acquisitions Database (SDC) from the beginning of 1985 to the end of 2010. We limit the sample to economically meaningful bids on public targets from public bidders because we

⁹ Prior studies show that client size (typically measured by total assets) is unsurprisingly the primary determinant of audit fees (see [Hay et al., 2006](#)).

¹⁰ This conjecture is consistent with discussions with Big 4 managers that target auditors may be more forthcoming “when they know we [the same audit firm] are on the other side of the transaction”.

¹¹ While shared auditors may yield integration cost efficiencies that acquirers may price into a transaction, we anticipate that the shared auditors' reduction on information asymmetry outweighs any integration cost savings.

¹² Prior literature finds auditor practice offices are an important characteristic when examining the impact of auditors on their clients (e.g., [Francis and Yu, 2009](#); [Gaver and Paterson, 2007](#); [Li, 2009](#); [Reichelt and Wang, 2010](#); [Reynolds and Francis, 2000](#)).

¹³ Prior studies have also shown that geographic proximity between a target and acquirer impacts acquirer returns arguing that access to “soft” information influences deal outcomes for “local” acquisitions ([Uysal et al., 2008](#)). This mechanism is consistent with auditors in practice offices acting as information intermediaries between targets and acquirers. We control for geographic proximity in our empirical tests.

require auditor, accounting, and stock price data for both bidders and targets. Bidders must own less than 50% of the target before the offer and seek to own more than 50% of the target at deal completion. Deal size must be at least ten million dollars, and targets must have book assets of at least five million dollars. We eliminate deals with related parties including repurchases, buybacks, and exchange offers, in addition to acquirers named as investor groups, shareholders, or creditors.¹⁴ We require announcement return data for targets and acquirers from CRSP. We augment our data in 2002–2010 with data from Audit Analytics. There are 3,294 deals meeting these restrictions and included in our final sample.¹⁵

We define shared-auditor deals as those in which the target and bidder receive auditing services from the same auditor for the fiscal year end immediately preceding the announcement of a bid. Our primary proxy for shared-auditor bids, *Shared Auditor*, is an indicator variable equal to one if Compustat (Audit Analytics for the period 2002–2010) reports that both the target and acquirer receive audit services from the same auditor in the year prior to the bid. We define *Shared Auditor Office* as an indicator variable equal to one if the target and acquirer receive audit services from the same practice office of an audit firm in the year immediately preceding a bid. Auditor practice office data is machine readable in Audit Analytics only after 2001. To examine the effect of auditor offices prior to SOX, we hand collect data on shared auditor offices for the period 1994–2001 by obtaining the Form 10-K filing for targets and acquirers from each sample bid and identifying which practice office signed the audit opinion immediately prior to the deal announcement. This analysis at the auditor practice level is limited to deals beginning in 1994 as SEC 10-K filings are available electronically beginning in 1994. We note that approximately 15% of firms in our sample receive audit services from an auditor office that is not the local office. This finding is consistent with Choi et al. (2012). For a detailed list of all variable definitions see Table 1.

3.2. Summary statistics and univariate analysis

Table 2, Panel A presents univariate statistics on the sample of bids. We find approximately 24% of sample bids for the period 1985–2010 have shared auditors, and in 6% of all bids between 1994 and 2010, targets and acquirers use the same local practice office of an auditor.

The univariate statistics in Table 2 are similar to previous studies on mergers and acquisitions. Deal premiums average approximately 46%, and targets receive on average announcement day returns of 21%, while bidders have announcement returns close to zero (–1%) (Betton et al., 2008). The mean transaction value is about \$1.24 billion. Tender offers make up 21% of the sample, and 29% of bids are all cash. Approximately 3% of bids are hostile, and 83% of bids complete. The average number of bidders is 1.13. Consistent with prior studies, deal protection devices are common. Termination fees average \$22.75 million, and toeholds are used in 8% of bids. The vast majority (87%) of bids have Big-N auditors for both the target and acquirer (untabulated). In Table 2, Panel B we tabulate descriptive statistics for the subsample of bids in which both the target and acquirer are Big-N clients. Descriptive statistics for the subsample of deals with clients of Big-N auditors are similar to the descriptive statistics of the full sample (for example, 26% of this sample's bids for the period 1985–2010 have shared auditors). We note that we winsorize all continuous variables at the 1% and 99% levels to reduce the impact of outliers.

Table 3, Panel A compares univariate statistics for different-auditor, shared-auditor, and shared-auditor-office deals. We find shared-auditor deals are less likely to be tender offers (*Tender Offer*) or cash only deals (*Cash Only Deal*). Shared-auditor deals are more likely to have a shared director (*Shared Director*) and are more likely to be within-industry deals (*Same 2-digit SIC*) relative to different-auditor deals. We also find that premiums (*Premium*) are 5% lower, on average, in bids with shared auditors and 14% lower when the target and acquirer share the same auditor office. Target announcement returns (*Target Abnormal Return*) are also 2% lower in shared-auditor bids. Acquirer announcement returns (*Acquirer Abnormal Return*) are marginally higher for shared-auditor bids, and deals are about 4% more likely to complete (*Completed*) with shared auditors. Shared auditors are also associated with lower bid competition (*of bidders*), consistent with targets having lower bargaining power in deals with shared auditors. Overall, the univariate results suggest that, given a bid, acquirers benefit from shared-auditor deals at the expense of the target shareholders.

Table 3, Panel B reports univariate statistics for the subset of within-industry deals partitioned into different-auditor, shared-auditor, and shared-auditor-office deals. We find that the results in this subsample of within-industry deals are consistent with those reported in Panel A. That is, premiums and target returns are lower in shared-auditor and shared-auditor-office deals relative to different-auditor deals. Acquirer abnormal returns and deal completion rates are higher in shared-auditor and shared-auditor-office deals relative to different-auditor deals.

Table 3, Panel C reports the total number of deals, the number of deals with shared auditors, and the number of deals with shared-auditor offices by year. We note that in 1991, 32% of all deals were shared-auditor deals, which is noteworthy as there were eight Big-N auditors, and in year 2009, 36.8% of all deals were shared-auditor deals.

¹⁴ Results are also robust to excluding foreign acquirers, asset acquisitions and acquisitions of less than 100% of the target company.

¹⁵ In contrast, a concurrent paper by Cai et al. (2014) require a complete (i.e., 100%) change in control which further reduces their primary sample of 1,971 acquisitions.

Table 1
Variable definitions.

Variable	Definition
Auditor variables	
<i>Auditor Network</i>	Auditor network in the U.S. audit market calculated as the number of clients an audit firm represents divided by the total audits available in the U.S. audit market (as calculated from the Compustat file).
<i>Auditor Industry Network</i>	Auditor network in the U.S. audit market within a two-digit SIC industry calculated as the number of clients an audit firm represents in a two-digit SIC code divided by the total audits available in the two-digit SIC code (as defined by the Compustat file).
<i>Auditor Tenure</i>	An indicator equal to one if the acquirer's auditor has audited the acquirer for longer than five years.
<i>Large Target</i>	An indicator equal to one if the transaction value of the target is larger than the median for the sample of shared-auditor bids.
<i>Shared Auditor</i>	An indicator variable that equals one if the target and acquirer received audit services from the same firm in the year immediately preceding the bid announcement.
<i>Shared Auditor Office</i>	An indicator equal to one if the target and acquirer share the same practice office of an audit firm. We use auditor office locations provided by Audit Analytics for observations 2002 and after. We hand collect data on auditor office locations for targets and acquirers for the period 1994–2001 from SEC filings available online at www.sec.gov .
Deal characteristics	
<i>Acquirer CAR</i>	The market-adjusted three day cumulative abnormal return to the acquirer around the deal announcement $[-1, 1]$.
<i>Cash Only Deal</i>	An indicator variable equal to one if a deal is paid entirely in cash, zero otherwise.
<i>Completed</i>	An indicator variable equal to one if a bid is completed, zero otherwise.
<i>Hostile</i>	An indicator variable equal to one if SDC classifies a bid as hostile, zero otherwise.
<i>of Bidders</i>	The number of bidders that have made public bids in an auction, as calculated by SDC. An auction is defined as all public bids on a target within 365 days of an initial bid.
<i>Premium</i>	The percentage difference between the bid price offered and the target's trading price four calendar weeks prior. If SDC premiums are missing, premium is calculated as the price offered per share, given by SDC, divided by the CRSP price of the target 20 trading days prior to the bid announcement.
<i>Same 2-digit SIC</i>	An indicator variable equal to one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. SIC codes are provided by SDC.
<i>Shared Advisor</i>	An indicator equal to one if the target and acquirer share a financial advisor. Missing observations are filled as zero due to the low frequency of shared advisors with non-missing data.
<i>Same City</i>	An indicator equal to one if the target and acquirer are headquartered in the same city.
<i>Shared Director</i>	An indicator equal to one if the target and acquirer share at least one director. We combine data from several sources to create Shared Director, specifically if BoardEx, Compact Disclosure, Corporate Library, or RiskMetrics (formerly IRRC) directors database record the same name for a target director as an acquirer director, we classify the deal as a shared-director deal. For bids without information on target and acquirer directors, a predictive model estimates which deals are likely to have a shared director. For observations without director data, we set this indicator equal to one if the predicted probability that the bid includes a shared director is in the top 3.6 percent of predicted probabilities. This corresponds to a predicted probability of 42%. For all other predicted probabilities, the value of the indicator is set at zero.
<i>Target CAR</i>	The market-adjusted three day cumulative abnormal return to the target around the deal announcement $[-1, 1]$.
<i>Target Termination Fee</i>	The logarithm of the dollar value of the target-payable termination fee in millions of dollars. The fee is set equal to zero in deals without termination fees.
<i>Tender Offer</i>	An indicator variable equal to one if a bid is structured as a tender offer, zero otherwise.
<i>Toehold Indicator</i>	An indicator variable equal to one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise.
<i>Value of Transaction</i>	The deal value reported by SDC in billions of dollars.
Target characteristics	
<i>Abnormal 1-year Returns</i>	The excess return from a one-factor model of expected daily returns. Parameters of the model are estimated for each Compustat firm-year from two years before fiscal year end to one year before fiscal year end $[-504, -252]$. Abnormal returns, the error from the one factor model, are summed across the current fiscal year from the beginning of the fiscal year to the end of the fiscal year $[-251, 0]$. A minimum of four months of data (85 observations) is required as event window for estimation.
<i>Asset Size</i>	The book value of target assets in billions.
<i>GR Dummy</i>	An indicator equal to one if there is a growth-resource mismatch. The indicator equals one if a firm has the combination low growth-high liquidity-low leverage or high growth-low liquidity-high leverage. The value is zero for all other combinations. High and low represent above and below the median values, respectively. The definitions of growth, liquidity, and leverage are shown below.
<i>Growth (Sales)</i>	The average rate of change in net sales over the previous three years.
<i>Industry Bids</i>	An indicator variable equal to one if there was bid activity in the firm's two-digit SIC code in the previous year.
<i>Leverage</i>	The average ratio of long-term debt to firm equity over the previous three years. Equity is the sum of preferred and common equity.
<i>Liquidity</i>	The average ratio of net liquid assets and book assets over the previous three years. Net liquid assets are defined as cash plus marketable securities less current liabilities.
<i>Market-to-Book</i>	The market value of target assets divided by the book value of target assets.
<i>Price-to-Earnings</i>	The ratio of the share price divided by the per-share earnings of the company.
<i>Return on Assets (ROA)</i>	The target earnings (EBIT) divided by the book value of target assets.
<i>Run-up (42 days)</i>	The market-adjusted change in the target's stock price from forty-two days before announcement to four days before announcement.

Table 1 (continued)

Variable	Definition
Bidder characteristics	
<i>Acquirer Assets</i>	The book value of acquirer assets in billions.
<i>Acquirer Market-to-Book</i>	The market value of acquirer equity divided by the book value of acquirer assets.
<i>Relative Size</i>	The ratio of the market value of target equity divided by the market value of acquirer equity.

3.3. Multivariate analysis of the probability of receiving a bid

To test [Hypothesis 1](#) we model the probability of a firm receiving a bid using all Compustat firms. We require Compustat firms to have book assets of at least five million dollars in order to make the Compustat sample comparable to our SDC sample. We use probit regressions with the Compustat panel data to estimate the likelihood of a firm receiving a bid:

$$\Pr(\text{Bid Received} = 1|X) = F(\alpha + \beta_1 \times \text{Auditor Network} + \beta_2 \times \text{Controls}_i), \quad (1)$$

where F represents the standard normal distribution and X includes a proxy for auditor sharing and control variables. The dependent variable, *Bid Received*, is an indicator variable equal to one for a firm-year if SDC reports that a company received at least one bid.

We use two proxies to capture the extent to which a Compustat firm (a potential target) shares an auditor with other Compustat firms (potential bidders). First, we include the breadth of the audit network, *Auditor Network*. We define *Auditor Network* as the number of clients that an auditor has, divided by the total number of firms in the Compustat sample. We calculate this ratio for each auditor in each year. If a firm retains an auditor with a large network, this firm, obviously, shares an auditor with a large number of firms. We create a similar proxy based on two-digit SIC industry classifications. For each year, we calculate each auditor's network in each industry, *Auditor Industry Network*.¹⁶ If a firm retains an auditor with a large industry network, then this firm shares an auditor with a relatively high number of other firms within the industry. The proxies for the potential to share an auditor are lagged by one year.

We control for factors related to the probability of a firm receiving a bid following [Palepu \(1986\)](#). If acquisitions provide a disciplinary effect on target managers, we expect target managerial ineffectiveness to increase the probability of receiving a bid. We proxy for managerial effectiveness using the one-year abnormal return to the target in the year prior to receiving a bid, *Abnormal 1-Year Return*. [Palepu \(1986\)](#) predicts that financially constrained firms with high growth opportunities (and vice versa) make good acquisition targets. We construct a growth-resource “mismatch” indicator, *GR Dummy*, to proxy for firms that have an imbalance between growth opportunities and financial resources. *GR Dummy* is an indicator variable equal to one if a company has (1) high growth, low liquidity, and high leverage, or (2) low growth, high liquidity, and low leverage, with high (low) measured as above (below) the mean value of each variable. *Growth (Sales)* is measured as the three-year average rate of change in net sales. We include proxies for financial constraints (*Liquidity* and *Leverage*), as [Ambrose and Megginson \(1992\)](#) predict that illiquid and leveraged firms are more likely to be targets. Because acquisition activity clusters in time ([Andrade et al., 2001](#)), we include an indicator, *Industry Bids*, equal to one if there was a bid in the two-digit SIC industry of the target in the past year. Because smaller firms lack the resources to bid on the largest firms, we control for target size with the book value of target assets, *Asset Size*. We use the target market-to-book ratio, *Market-to-Book*, and the price-to-earnings ratio, *Price-to-Earnings*, to control for the impact of target value on bidding activity as relatively “cheaper” targets may be more likely to receive a bid. Lastly, we include industry and year fixed effects to control for time and industry variation in the probability of receiving a bid. Details on variable construction are reported in [Table 1](#).

[Table 4](#) presents the marginal effects of the probit regressions of the probability of a firm receiving a bid on the two proxies for shared auditors. In Model 1, we use *Auditor Industry Network* as a proxy for the magnitude of auditor sharing for Compustat firms. We find a positive and statistically significant marginal effect on the probability of a firm receiving a bid (p -value < 0.01). The marginal effect estimate of *Auditor Industry Network* is economically significant at 4.1%. To demonstrate the economic significance, a one standard deviation (i.e., 0.07) increase in the *Auditor Industry Network* of a company's audit firm increases the probability of a firm receiving a bid by 0.29% or 8.33% ($=0.29\%/3.48\%$) of the unconditional probability of receiving a bid. In Model 2, we use *Auditor Network* as a proxy for the presence of a shared auditor, and we again find a positive and statistically significant marginal effect (p -value < 0.01). An increase of one standard deviation (i.e., 0.05) in the auditor network of a company's auditor increases the probability of a firm receiving a bid by 0.34% ($=0.05 \times 0.068$). This increase represents 9.20% ($0.32\%/3.48\%$) of the unconditional probability of a firm receiving a bid. Our proxy for auditor sharing is obviously related to auditor size. Larger, more reputable auditors may provide assurance to the acquirer on the value of the target ([Xie et al., 2013](#)). To address concerns that our results are driven by the largest audit firms (Big-N

¹⁶ We also use alternative proxies for auditor sharing, based on the total number of clients for each auditor, not scaled by the total number of firms in the market. We find similar relations between these proxies for auditor sharing and the probability of receiving a bid.

Table 2

Univariate statistics for acquisition bids between 1985 and 2010.

Panel A – Univariate statistics for full sample of bids					
Variables	Obs.	Mean	Std. Dev.	Min.	Max.
<u>Deal characteristics</u>					
Shared Auditor	3,294	0.24	0.43	0.00	1.00
Shared Auditor Office	2,789	0.06	0.24	0.00	1.00
Same City	3,294	0.07	0.26	0.00	1.00
Shared Advisor	3,294	0.00	0.07	0.00	1.00
Shared Director	1,816	0.05	0.21	0.00	1.00
Value of Transaction	3,294	1.24	2.85	0.01	16.61
Tender Offer	3,294	0.21	0.40	0.00	1.00
Cash Only Deal	3,294	0.29	0.45	0.00	1.00
Hostile Deal	3,294	0.03	0.17	0.00	1.00
of Bidders	3,294	1.13	0.41	1.00	5.00
Toehold Indicator	3,294	0.08	0.27	0.00	1.00
Target Termination Fee	3,294	22.75	58.38	0.00	350.00
Same 2-digit SIC	3,294	0.60	0.49	0.00	1.00
<u>Target characteristics</u>					
Target Assets	3,294	1.26	4.23	0.00	38.68
Target Market-to-Book	3,294	1.39	1.59	0.03	8.90
Target ROA	3,294	0.01	0.21	– 1.29	0.33
Run-up (42 days)	3,294	0.05	0.26	– 0.62	0.99
<u>Acquirer characteristics</u>					
Acquirer Asset Size	3,290	8.96	26.54	0.00	228.05
Acquirer Market-to-Book	3,288	1.75	1.93	0.04	10.71
Relative Size	3,288	0.44	1.19	0.00	39.94
<u>Deal outcomes</u>					
Premium	3,134	0.46	0.46	– 0.55	2.80
Acquirer Abnormal Return	3,294	– 0.01	0.07	– 0.23	0.27
Target Abnormal Return	3,294	0.21	0.23	– 0.27	1.04
Completed	3,294	0.83	0.38	0.00	1.00
Panel B – Univariate statistics for Big-N auditor bids					
Variables	Obs.	Mean	Std. Dev.	Min.	Max.
<u>Deal characteristics</u>					
Shared Auditor	2,875	0.26	0.44	0.00	1.00
Shared Auditor Office	2,281	0.06	0.24	0.00	1.00
Same City	2,875	0.07	0.26	0.00	1.00
Shared Advisor	2,875	0.00	0.06	0.00	1.00
Shared Director	1,368	0.04	0.20	0.00	1.00
Value of Transaction	2,875	1.38	3.01	0.01	16.61
Tender Offer	2,875	0.21	0.41	0.00	1.00
Cash Only Deal	2,875	0.29	0.45	0.00	1.00
Hostile Deal	2,875	0.03	0.17	0.00	1.00
of Bidders	2,875	1.13	0.41	1.00	5.00
Toehold Indicator	2,875	0.08	0.27	0.00	1.00
Target Termination Fee	2,875	25.28	61.92	0.00	350.00
Same 2-digit SIC	2,875	0.60	0.49	0.00	1.00
<u>Target characteristics</u>					
Target Asset Size	2,875	1.39	4.51	0.00	38.68
Target Market-to-Book	2,875	1.43	1.60	0.03	8.90
Target ROA	2,875	0.02	0.21	– 1.29	0.33
Run-up (42 days)	2,875	0.05	0.25	– 0.62	0.99
<u>Acquirer characteristics</u>					
Acquirer Asset Size	2,872	9.52	27.32	0.00	228.05
Acquirer Market-to-Book	2,870	1.77	1.93	0.04	10.71
Relative Size	2,870	0.45	1.25	0.00	39.94
<u>Deal outcomes</u>					
Premium	2,764	0.45	0.45	– 0.55	2.80
Acquirer Abnormal Return	2,875	– 0.01	0.07	– 0.23	0.27
Target Abnormal Return	2,875	0.21	0.23	– 0.27	1.04

Table 2 (continued)

Panel B – Univariate statistics for Big-N auditor bids					
Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Completed	2,875	0.83	0.37	0.00	1.00

This table reports summary statistics of sample acquisitions from the SDC database for the years 1985 through 2010. Panel A reports statistics on the full sample of bids. Panel B reports statistics for bids in which the target and acquirer are audited by a Big-N auditor. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm prior to the bid announcement. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Advisor* is an indicator equal to one if the target and acquirer share an investment bank as an advisor to the acquisition. *Shared Director* is an indicator equal to one if the target and acquirer have a shared director. *Value of Transaction* is the deal value reported by SDC in billions. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *of Bidders* is the number of bidders that have made public bids in an auction. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Target Asset Size* is the book value of target assets. *Target (Acquirer) Market-to-Book* is the market value of target (acquirer) assets divided by the book value of target (acquirer) assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Run-up* is the market-adjusted change in the target's stock price from forty-two trading days before announcement to four days before announcement. *Acquirer Asset Size* is the book value of acquirer assets. *Acquirer Market-to-Book* is the market value of acquirer equity divided by the book value of acquirer assets. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Premium* is the percentage difference between the bid offered and the target's trading price four weeks prior. *Acquirer Abnormal Return* is the market-adjusted three day cumulative abnormal return to the acquirer around the deal announcement $[-1, 1]$. *Target Abnormal Return* is the market-adjusted three day cumulative abnormal return to the target around the deal announcement $[-1, 1]$. *Completed* is an indicator variable equal to one if a bid is completed, zero otherwise.

auditors), in untabulated analysis, we include an indicator equal to one if a firm is audited by a Big-N auditor. We find the inferences from our above tests (Models 1 and 2) are unchanged when we control for presence of Big-N auditor.

To further our analysis, we eliminate all non-Big-N audit clients and re-estimate Eq. (1) on the subsample of companies with a Big-N auditor. Models 3 and 4 of Table 4 report the results. We find that the marginal effects of *Auditor Industry Network* (3.0%) and *Auditor Network* (6.8%) remain positive and statistically significant (p -value < 0.01).

Lastly, we partition our results into the pre- and post-Sarbanes Oxley Act periods to examine the effect of SOX on auditors' willingness to reduce information asymmetry between targets and bidders. Models 5 and 6 in Table 4 report the results. For brevity, we report the results in the pre-SOX and post-SOX periods using *Auditor Industry Network*. Results are qualitatively and statistically similar to untabulated results using *Auditor Network*. We find that the marginal effect of the shared-auditor proxy (*Auditor Industry Network*) is positive (6.5%) and statistically significant in the pre-SOX period (p -value < 0.01). The marginal effect on *Auditor Industry Network* in the post-SOX period is also positive (2.4%) and statistically significant (p -value < 0.05). However, the magnitude is approximately 60% lower than the effect of the shared-auditor proxy in the pre-SOX period. We find the coefficients (unreported) on *Auditor Network* and *Auditor Industry Network* are significantly different at the 10% level in the pre- vs. post-SOX period.

Overall, we find that proxies for shared auditors are related to a higher probability of a firm receiving a bid. These results are consistent with Hypothesis 1, that acquirers use auditor information when making acquisition decisions. This information likely gives shared-auditor bidders an advantage over non-shared-auditor bidders.

4. Multivariate analysis of acquisition outcomes

We next measure the impact of shared auditors on acquisition outcomes including deal premiums, target abnormal announcement day returns, acquirer abnormal announcement day returns, and deal completion rates.

4.1. Deal premiums

We model the effect of shared auditors on deal premiums in the sample of announced bids as follows:

$$\text{Premium}_i = \alpha + \beta_1 \times \text{Shared Auditor}_i + \beta_2 \times \text{Controls}_i + e_i \quad (2)$$

Deal premium is the difference between the price offered in the bid and the target's trading price four weeks prior, as calculated by SDC.¹⁷ SDC's premium data does not cover all target firms in the sample (Officer, 2003). We increase the coverage of SDC's premium data by combining SDC's price per share data with CRSP prices twenty days prior to bid announcement to maximize sample size. If the first premium measure is missing, we use the alternative measure to fill in

¹⁷ In sensitivity analysis we examine alternative measures to calculate premium and find consistent results with those reported in Table 5. We also measure premiums in 50-day and 60-day windows to address concerns that shared-auditor deals may be privately known to select investors earlier than four weeks prior to the bid announcement. The results still hold. See Table 11 for reported results using alternative measures of deal premium.

Table 3

Univariate statistics by shared auditor status.

Panel A: Univariate statistics of acquisition bids partitioned on different auditor, shared auditor, and shared auditor office													
Variables	Different Auditor (1)			Shared Auditor (2)			Shared Auditor Office (3)			Different-Shared (1–2)		Different-Shared Office (1–3)	
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Diff.	t-Stat	Diff.	t-Stat
Deal characteristics													
Shared Auditor Office	1,973	0.00	0.00	648	0.24	0.00	156	1.00	1.00	–0.24	–14.32	–1.00	n/a
Same City	2,511	0.05	0.00	783	0.15	0.00	156	0.47	0.00	–0.10	–7.19	–0.42	–10.34
Shared Advisor	2,511	0.00	0.00	783	0.00	0.00	156	0.01	0.00	0.00	0.21	–0.01	–0.09
Shared Director	1,184	0.03	0.00	364	0.09	0.00	77	0.16	0.00	–0.06	3.74	–0.19	–3.98
Value of Transaction	2,511	1.22	0.23	783	1.31	0.26	156	1.30	0.20	–0.09	–0.75	–0.08	–0.36
Tender Offer	2,511	0.21	0.00	783	0.18	0.00	156	0.13	0.00	0.03	2.17	0.08	2.77
Cash Only Deal	2,511	0.30	0.00	783	0.25	0.00	156	0.21	0.00	0.05	2.70	0.10	2.86
Hostile Deal	2,511	0.03	0.00	783	0.02	0.00	156	0.01	0.00	0.01	1.37	0.02	1.81
of Bidders	2,511	1.14	1.00	783	1.09	1.00	156	1.06	1.00	0.05	3.58	0.08	3.23
Toehold Indicator	2,511	0.08	0.00	783	0.08	0.00	156	0.10	0.00	–0.01	0.47	–0.02	–0.86
Target Termination Fee	2,511	21.95	2.00	783	25.30	2.50	156	24.75	2.50	–3.35	–1.37	–2.80	–0.60
Same 2-digit SIC	2,511	0.59	1.00	783	0.64	1.00	156	0.62	1.00	–0.05	–2.62	–0.03	–0.81
Target characteristics													
Target Assets	2,511	1.23	0.16	783	1.33	0.20	156	1.68	0.27	–0.09	–0.53	–0.45	–1.07
Target Market-to-Book	2,511	1.41	0.88	783	1.34	0.84	156	1.17	0.80	0.08	1.20	0.23	2.15
Target ROA	2,511	0.02	0.06	783	0.00	0.05	156	0.03	0.05	0.02	2.23	–0.01	–0.58
Run-up (42 days)	2,511	0.05	0.03	783	0.05	0.01	156	0.07	0.00	0.00	–0.10	–0.01	–0.67
Acquirer characteristics													
Acquirer Asset Size	2,508	9.15	1.18	782	8.34	1.20	156	5.77	1.38	0.81	0.78	3.39	2.46
Acquirer Market-to-Book	2,507	1.76	1.14	781	1.73	1.09	156	1.44	0.84	0.03	0.35	0.32	2.07
Relative Size	2,507	0.43	0.15	781	0.48	0.20	156	0.49	0.28	–0.06	–1.36	–0.06	–1.08
Deal outcomes													
Premium	2,394	0.47	0.38	740	0.42	0.32	147	0.33	0.23	0.05	2.62	0.14	4.44
Acquirer Abnormal Return	2,511	–0.01	–0.01	783	–0.01	–0.01	156	0.00	0.00	0.00	–0.82	–0.01	–1.79
Target Abnormal Return	2,511	0.21	0.17	783	0.19	0.15	156	0.17	0.13	0.02	2.10	0.04	2.86
Completed	2,511	0.82	1.00	783	0.86	1.00	156	0.91	1.00	–0.05	–3.25	–0.09	–3.81
Panel B: Univariate statistics of within-industry acquisition bids partitioned on different auditor, shared auditor and shared auditor office													
Variables	Different Auditor (1)			Shared Auditor (2)			Shared Auditor Office (3)			Different-Shared (1–2)		Different-Shared Office (1–3)	
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Diff.	t-Stat	Diff.	t-Stat
Deal characteristics													
Shared Auditor Office	1,218	0.00	0.00	430	0.23	0.00	97	1.00	1.00	–0.23	–11.18	–1.00	n/a
Same City	1,480	0.05	0.00	502	0.14	0.00	97	0.44	0.00	–0.09	–5.43	–0.39	–7.67
Shared Advisor	1,480	0.00	0.00	502	0.01	0.00	97	0.02	0.00	0.00	–0.69	–0.02	–1.18
Shared Director	739	0.03	0.00	227	0.06	0.00	47	0.11	0.00	–0.04	–2.11	–0.14	–2.62
Value of Transaction	1,480	1.35	0.25	502	1.45	0.30	97	1.23	0.19	–0.11	–0.67	0.11	0.40
Tender Offer	1,480	0.18	0.00	502	0.16	0.00	97	0.13	0.00	0.02	1.06	0.05	1.38
Cash Only Deal	1,480	0.26	0.00	502	0.21	0.00	97	0.20	0.00	0.05	2.39	0.07	1.64
Hostile Deal	1,480	0.03	0.00	502	0.02	0.00	97	0.01	0.00	0.01	1.39	0.02	2.02
of Bidders	1,480	1.15	1.00	502	1.10	1.00	97	1.10	1.00	0.05	2.57	0.05	1.23
Toehold Indicator	1,480	0.06	0.00	502	0.07	0.00	97	0.08	0.00	–0.01	–0.53	–0.02	–0.68
Target Termination Fee	1,480	24.28	3.00	502	28.46	3.35	97	26.22	4.00	–4.18	–1.28	–1.94	–0.31
Same 2-digit SIC	1,480	1.00	1.00	502	1.00	1.00	97	1.00	1.00	0.00	n/a	0.00	n/a
Target characteristics													
Target Assets	1,480	1.37	0.18	502	1.47	0.23	97	1.65	0.28	–0.11	–0.46	–0.28	–0.54
Target Market-to-Book	1,480	1.40	0.84	502	1.35	0.85	97	1.19	0.80	0.04	0.56	0.21	1.29
Target ROA	1,480	0.01	0.06	502	–0.01	0.05	97	0.01	0.04	0.03	2.30	0.01	0.56
Run-up (42 days)	1,480	0.04	0.02	502	0.04	0.01	97	0.06	0.00	0.00	–0.02	–0.02	–0.76
Acquirer characteristics													
Acquirer Asset Size	1,478	7.17	1.05	502	6.82	1.23	97	4.18	1.65	0.36	0.33	2.99	2.38
Acquirer Market-to-Book	1,477	1.84	1.17	501	1.80	1.13	97	1.52	0.84	0.04	0.35	0.32	1.47
Relative Size	1,477	0.43	0.18	501	0.48	0.20	97	0.42	0.28	–0.06	–1.06	0.00	0.01
Deal outcomes													
Premium	1,409	0.46	0.37	476	0.39	0.30	92	0.32	0.22	0.07	3.14	0.14	3.37
Acquirer Abnormal Return	1,480	–0.02	–0.01	502	–0.01	–0.01	97	0.00	0.00	–0.01	–1.82	–0.01	–1.65
Target Abnormal Return	1,480	0.21	0.16	502	0.19	0.15	97	0.17	0.13	0.02	1.71	0.04	2.11

Table 3 (continued)

Panel B: Univariate statistics of within-industry acquisition bids partitioned on different auditor, shared auditor and shared auditor office													
Variables	Different Auditor (1)			Shared Auditor (2)			Shared Auditor Office (3)			Different-Shared (1–2)		Different-Shared Office (1–3)	
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Diff.	t-Stat	Diff.	t-Stat
Completed	1,480	0.83	1.00	502	0.86	1.00	97	0.91	1.00	−0.03	−1.91	−0.08	−2.52
Panel C – Shared auditors and shared auditor offices by year													
Year	Obs.	Shared Auditor (%)				Obs.	Shared Auditor Office (%)				Obs.		
1985	83	16.87				(14)	–				–		
1986	89	14.61				(13)	–				–		
1987	97	19.59				(19)	–				–		
1988	108	18.52				(20)	–				–		
1989	83	16.87				(14)	–				–		
1990	46	23.91				(11)	–				–		
1991	50	32.00				(16)	–				–		
1992	43	25.58				(11)	–				–		
1993	74	22.97				(17)	–				–		
1994	124	23.39				(29)	5.65				(7)		
1995	175	20.00				(35)	4.00				(7)		
1996	207	21.74				(45)	5.80				(12)		
1997	275	22.18				(61)	6.91				(19)		
1998	298	22.82				(68)	4.03				(12)		
1999	267	26.97				(72)	4.12				(11)		
2000	222	27.48				(61)	5.41				(12)		
2001	165	25.45				(42)	6.67				(11)		
2002	72	20.83				(15)	6.94				(5)		
2003	94	27.66				(26)	8.51				(8)		
2004	87	27.59				(24)	9.20				(8)		
2005	99	29.29				(29)	6.06				(6)		
2006	136	19.85				(27)	5.15				(7)		
2007	133	24.81				(33)	6.77				(9)		
2008	104	24.04				(25)	1.92				(2)		
2009	76	36.84				(28)	14.47				(11)		
2010	87	32.18				(28)	10.34				(9)		
Total	3,294					783					(156)		

This table reports univariate statistics on sample deals. The set of acquisitions comes from the SDC database for the years 1985 through 2010. Panels A and B reports statistics on firm and deal characteristics. The sample is split into three subsamples, based on whether the target and acquirer have different auditors, shared auditors, or shared auditor offices. All continuous variables are winsorized at the 1% and 99% levels. *t*-Statistics are reported for an unpaired difference-in-means *T*-tests. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Advisor* is an indicator equal to one if the target and acquirer share an investment bank as an advisor to the acquisition. *Shared Director* is an indicator equal to one if the target and acquirer have a director in common. *Value of Transaction* is the deal value reported by SDC in billions. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. The *of Bidders* is the number of bidders that have made public bids in an auction. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero otherwise. *Target (Acquirer) Asset Size* is the book value of target (acquirer) assets. *Target (Acquirer) Market-to-Book* is the market value of target (acquirer) assets divided by the book value of target (acquirer) assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Run-up (42 days)* is the market-adjusted change in the target's stock price from forty-two trading days before announcement to four days before announcement. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Premium* is the percentage difference between the bid price offered and the target's trading price four weeks prior. *Acquirer Abnormal Return* is the market-adjusted three day cumulative abnormal return to the acquirer around the deal announcement $[-1, 1]$. *Target Abnormal Return* is the market-adjusted three day cumulative abnormal return to the target around the deal announcement $[-1, 1]$. *Completed* is an indicator variable equal to one if a bid is completed, zero otherwise. Panel C reports the frequency of shared auditors and shared auditor offices across years. The number of deals with shared auditors or shared auditor offices is reported in parentheses.

missing observations. Results are generally robust to different measures of deal premiums and to exclusion of deals that are missing SDC premium data. Premium data are winsorized at the 1% and 99% levels to reduce the effect of outliers.

We include indicator variables for the presence of shared auditors, as well as control variables that affect deal premiums. *Same City* is an indicator variable to control for geographic proximity of the target and acquirer as prior studies show that closer geographic proximity between the target and acquirer reduces information asymmetry (Uysal et al., 2008).¹⁸ *Same City* equals one if SDC reports that the headquarters of the target and acquirer are in the same city, zero otherwise.

¹⁸ Other studies have also found that investors tend to have superior information and make better investment decisions when they are geographically closer to their investees. See for example, Coval and Moskowitz (2001) and Malloy (2005).

Second, *Shared Director* is an indicator variable equal to one if a board member sits on the board of both the target and acquirer in the acquisition, as prior studies show that shared directors are associated with deal outcomes and appear to be in a position to share transaction-sensitive information with acquirers (Cai and Sevilir, 2012). We combine data from several sources to create *Shared Director*. Specifically, if BoardEx, Compact Disclosure, Corporate Library, or RiskMetrics (formerly IRRIC) directors databases record the same name for a target director as an acquirer director, we classify the deal as a deal with a shared director. These datasets do not cover all publicly traded firms, and director data is missing for about half of the sample bids included in the SDC sample. We fill missing director data with predicted values in an attempt to maximize the observations in the sample. To predict shared directors we estimate a probit model predicting the probability that a bid has a shared director using all observations with available director data. Specifically, we include the deal and target firm characteristics including relative size of the target to acquirer, the value of the transaction, the target market-to-book ratio, the target ROA, the target stock price run-up, a toehold indicator, a same 2-digit SIC industry indicator, a tender offer indicator, the target termination fee, the number of bidders, and a cash only deal indicator, as well as industry and year fixed effects as predictors for the presence of a shared director. The pseudo *R*-squared of 0.204 in this regression indicates that our choice of prediction variables for the shared director indicator is jointly statistically significant and that it captures a non-trivial part of its variation. We then use the estimated parameters from the probit model to predict the probabilities of a shared director for bids that are missing director data. We find targets and acquirers share directors in about 3.6% of the SDC sample of bids with non-missing director data, and therefore, we assume a similar proportion of shared director bids in the subsample with missing director data.¹⁹ Therefore, we classify a bid as a shared-director bid for missing observations if its predicted probability of having a shared director is in the top 3.6% of the predicted probability distribution for the sample of deals missing shared director data. This corresponds to a predicted probability above 42%. To ascertain that our results are not driven by the choice of prediction technique for transactions with missing shared director data, we perform a series of robustness tests.²⁰ In light of these robustness checks and given the significant number of transactions missing director data we report results with the predicted shared director indicator variable.

Shared Advisor is an indicator variable equal to one if an investment advisor represents both the target and acquirer in the acquisition. We include *Shared Advisor* as prior studies show that shared advisors tend to favor acquirers (Agrawal et al., 2013).^{21,22} In the case of multiple financial advisors for targets or acquirers, *Shared Advisor* equals one if any of the target's advisors are the same as any of the acquirer's advisors. The size of the target relative to the acquirer can impact the negotiating power of the target, and as such we control for relative size (*Relative Size*) (Asquith et al., 1983). We also control for the value of the transaction (*Value of Transaction*). As prior research finds that managerial performance impacts the valuation of a target and, hence, the benefits of a takeover, we also control for managerial performance and valuation using target market-to-book ratio (*Target Market-to-Book*) and target return on assets (*Target ROA*), respectively (Lang et al., 1989). We control for run-ups in target stock price as Schwert (1996) shows that price run-ups increase target premiums. We control for run-ups with the market-adjusted change in the target's stock price from forty-two days before announcement to four days before announcement (*Run-up*). We control for the determinants of bid premiums including toeholds (*Toehold Indicator*) and tender offers (*Tender Offer*) (Betton et al., 2009), termination fees (*Target Termination Fee*) (Bates and Lemmon, 2003; Officer, 2003), form of payment (*Cash Only Deal*) (Eckbo and Langohr, 1989), deal hostility (*Hostile*) (Schwert, 2002), bid competition (*of Bidders*) (Bradley et al., 1988), and same industry deals (*Same 2-digit SIC*) (Andrade and Stafford, 2004). Lastly, we include year and industry fixed effects to control for variation by year and industry. For brevity, variable definitions are reported in Table 1.

Table 5, Panel A reports the results of Eq. (2). Model 1 reports the results using all acquisitions in the sample for the period 1985–2010. We find that deal premiums are approximately 4.2% lower in deals with shared auditors at the mean, after controlling for other determinants of deal premium. This represents a 9.2% reduction in the average premium of 45.8% suggesting the impact of a shared auditor is economically meaningful to shareholders of the target and acquirer. This result

¹⁹ This rate is consistent with the 3.9% (i.e., 65 of 1,664 M&A deals) rate of first degree board connections found in Cai and Sevilir (2012).

²⁰ First, results are robust if we use a 50% value for the predicted probability as the cut-off to assume a bid has a shared director. Second, results are also robust if we use a 4.0% or a 4.5% top percentile cut-off of predicted probabilities of a shared director whereas these cut-offs correspond to the average share of bids with available shared director data and with available either (i) shared-auditor-office data, or (ii) shared-auditor data. Third, we also exclude deals with missing director data, approximately 52% of the sample observations reported in Table 5, Model 1. In these tests, we find that our results for the Shared-Auditor Office effect still hold in the sample of Big-N deals. For example, the coefficient on *Shared Auditor Office* in this sample is -0.106 with a *t*-statistic of -2.27 . Fourth, our results are robust if we assume no shared directors among deals with missing director data (i.e., assume a value of zero for the *Shared Director* if data on it are missing).

²¹ In untabulated tests we re-estimate Eq. (2) excluding *Shared Auditor* to measure the effect of *Same City*, *Shared Director*, and *Shared Advisor*. We note the marginal effect of the *Same City* and *Shared Director* variables are both 1–3% higher in magnitude when *Shared Auditor* is excluded from Eq. (2) illustrating the effect of *Shared Auditor* on the economic impact of *Same City* and *Shared Director*. The impact of *Shared Advisor* on deal premium is not statistically different with or without *Shared Auditor*.

²² In general, we expect shared advisors to have a minimal impact on our results. Agrawal et al. (2013) find 98 out of 6,272 bids have shared advisors between 1981 and 2005, and only 44 out of 5,175 bids have shared advisors between 1990 and 2005. Without restrictions on target size and price data, our initial sample has 5,045 bids from SDC with 40 bids with shared advisors between 1985 and 2011. Our final sample has very few shared advisor deals, about 14, as these deals are less common in recent years and with larger targets. Approximately 25% of our sample bids are missing data on either the target or the acquirer advisor, and we fill these missing observations with zero, due to the small number of expected shared advisors. Results are generally robust to dropping these missing observations, although acquirer abnormal returns lose statistical significance, likely due to the lower statistical power to detect return differences.

is consistent with auditors providing a competitive advantage to those bidders who share auditors with the target. Model 2 reports the results replacing *Shared Auditor* with *Shared Auditor Office*. We limit the sample in Models 2 and 5 to acquisitions after 1994, as we hand collect auditor office data from publicly available SEC filings, and data on auditor offices is unavailable prior to 1994. We exclude deals with shared auditors but different offices to compute the effect of a shared-auditor office. Our expectation is the magnitude of the effect of shared auditors should be greater at the local practice office level relative to across practice offices. In Model 2 we find the coefficient on *Shared Auditor Office* is negative and statistically significant (p -value < 0.01) indicating 7.7% lower premiums, on average, which represents a 16.7% reduction in deal premium. Table 5, Model 3 reports the results of Eq. (2) on all deals from 1994 to 2010, and we split the *Shared Auditor* variable into *Shared Auditor Office* and *Shared Auditor–Different Office* to address the incremental explanatory power of sharing an auditor office. The marginal effect of *Shared Auditor Office* remains negative at –8% and statistically significant (p -value < 0.01), while the marginal effect of *Shared Auditor–Different Office* is negative (–1.9%) but statistically insignificant. Therefore the negative and statistically significant coefficient on *Shared Auditor* in Model 1 appears driven by the subset of *Shared Auditor Office* transactions.

We next limit the sample to deals in which both the target and acquirer are audited by Big-N auditors. We find the coefficient on *Shared Auditor (Shared Auditor Office)* in Model 4 (5) is negative and statistically significant (p -value < 0.01), indicating a 5.0% (10.2%) lower premium or a 10.9% (22.2%) reduction in the average premium of 46%. The result in Model 5 is again consistent with Hypothesis 3, as our expectation would be that the effect of shared auditors is greater when targets and acquirers contract with the same auditor practice office. Table 5, Model 6 reports the results of Eq. (2) with the same controls of Model 3 but limiting the sample to Big-N deals only. Again, *Shared Auditor Office* has a negative (–10.8%) and statistically significant effect (p -value < 0.01) on deal premium, while *Shared Auditor–Different Office* has a negative (–2.5%) but statistically insignificant effect on deal premium. Therefore, the effect of shared auditors on deal premiums appears to be primarily driven by sharing of auditor practice offices, suggestive of an information transfer occurring within auditors' practice offices.

4.2. Shared auditors and auditor quality

To test Hypothesis 4 that the shared-auditor effect is more (less) pronounced in high (low) quality auditors, we examine the relation among shared auditors, auditor quality, and deal premiums. We focus on deal premiums for our analysis as we anticipate that if shared auditors leak information about the deal this will be reflected in deal premiums, and this leakage is less likely to occur with higher quality auditors. Our model is as follows:

$$\text{Premium}_i = \alpha + \beta_1 \times \text{Shared Auditor}_i + \beta_2 \times \text{Auditor Quality}_i + \beta_3 \times \text{Shared Auditor}_i \times \text{Auditor Quality}_i + \beta_4 \times \text{Controls}_i + e_i. \quad (3)$$

We use target size and auditor tenure to proxy for auditor quality.²³ Table 5, Panels B and C report the results of our tests. Prior studies show that auditors provide higher quality audits to larger clients and, correspondingly, lower quality audits to smaller clients (Reynolds and Francis, 2000). Along with lower quality audits, we expect auditors will be less likely to protect shareholder interests of smaller targets relative to shareholders of larger targets, given lower fees paid by smaller clients and the reduced overall importance to an auditor's client portfolio of an individual firm. Furthermore, with larger targets there may be increased uncertainty about the ongoing management team, and therefore, shared auditors may be less likely to cater to acquirers of larger targets.²⁴

We proxy for target size using an indicator variable (*Large Target*) equal to one if the value of the target is greater than the median value for sample bids. Table 5, Panel B reports the results. Model 1 includes all sample bids from 1985 to 2010. Model 2 includes all deals for the period 1994–2010, excluding deals with shared auditors but different practice offices. Model 3 includes all deals from 1994 to 2010 and includes *Shared Auditor–Different Office*, to measure the incremental effect of *Shared Auditor Office*. Models 4–6 include Big-N deals only with the same specifications as Models 1–3, in sequence.

In each model, we find the coefficient on *Shared Auditor* or *Shared Auditor Office* is negative and statistically significant (p -value < 0.01), indicating reductions in premiums ranging from 6.2% to 17.7%, respectively. The shared-auditor effect is more pronounced if the auditor's office is shared. We find that the coefficient on *Shared Auditor* \times *Large Target* and *Shared Auditor Office* \times *Large Target* is positive in each reported model indicating offsets in premium reductions from shared auditors ranging from 4.9% to 17.4%, and this coefficient is statistically significant at conventional levels in five of the six

²³ In untabulated analysis, we also examine the effect of auditor office size and auditors' industry expertise (Reichelt and Wang, 2010) on the relation between shared auditor and deal outcomes. However, examination of office size and industry expertise greatly reduces the sample size for our analysis and thus limits the analysis to the post-SOX period. We first control for office size and industry expertise and find inclusion of these control variables does not eliminate the statistically significant relation between *Shared Auditor (Shared Auditor Office)* and deal premiums or completion rates. We next find that auditor's industry expertise has no impact on shared-auditor deals. Lastly, we find the shared auditor effect is more pronounced in larger auditor offices relative to smaller auditor offices. This office size effect may be due to more opportunities and potential "matches" of targets and acquirers relative to smaller auditor offices with fewer clients, and correspondingly fewer possible M&A targets. However, we are cautious in interpretation due to the limited sample size.

²⁴ Recent research suggests that, while audit committees are statutorily responsible for the relation between the client and the external auditor after the passage and implementation of SOX, managers still appear to have a significant role in setting audit fees (Beck and Mauldin, 2014) and in auditor selection decisions (Dhaliwal et al., in press), consistent with the pre-SOX period.

Table 4
The determinants of receiving a bid.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All	All	Big-N	Big-N	Pre-SOX	Post-SOX
<i>Auditor Industry Network</i> (<i>t</i> -Stat)	0.041*** (4.60)		0.030*** (2.80)		0.065*** (5.27)	0.024** (2.06)
<i>Auditor Network</i>		0.069*** (4.99)		0.068*** (2.87)		
<i>Abnormal 1-Year Returns</i>	−0.005 (−0.85)	−0.005 (−0.85)	−0.012* (−1.81)	−0.012* (−1.81)	−0.004 (−0.52)	−0.008 (−0.95)
<i>GR Dummy</i>	−0.005*** (−4.14)	−0.005*** (−4.11)	−0.006*** (−4.93)	−0.006*** (−5.18)	−0.007*** (−4.59)	−0.003 (−1.59)
<i>Growth (Sales)</i>	−0.042** (−2.16)	−0.043** (−2.18)	−0.038* (−1.91)	−0.039* (−1.95)	−0.050** (−2.14)	−0.020 (−0.55)
<i>Liquidity</i>	0.012*** (3.88)	0.012*** (3.91)	0.011*** (3.48)	0.011*** (3.53)	0.007 (1.64)	0.018*** (4.41)
<i>Leverage</i>	0.044** (2.06)	0.044** (2.06)	0.061*** (2.84)	0.061*** (2.89)	0.076*** (2.66)	−0.004 (−0.16)
<i>Industry Bids</i>	0.004* (1.92)	0.004* (1.91)	0.005* (1.95)	0.005* (1.95)	0.005 (1.40)	0.001 (0.23)
<i>Asset Size</i>	−0.006*** (−6.89)	−0.006*** (−7.05)	−0.007*** (−7.86)	−0.007*** (−9.09)	−0.008*** (−5.37)	−0.004*** (−4.34)
<i>Market-to-Book</i>	−0.002*** (−5.67)	−0.002*** (−5.70)	−0.002*** (−5.41)	−0.002*** (−5.74)	−0.002*** (−4.03)	−0.003*** (−4.67)
<i>Price-to-Earnings</i>	−0.002 (−0.11)	−0.001 (−0.15)	−0.002 (−0.17)	−0.002 (−0.18)	0.004 (0.26)	−0.006 (−0.33)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	97,561	97,561	89,729	89,729	60,674	36,887
Pseudo <i>R</i> -squared	0.036	0.036	0.036	0.036	0.040	0.033

This table presents estimates of marginal effects of probit regressions estimating the probability of receiving a bid. We create a panel of potential targets by combining the panel of Compustat firms with SDC bid data for the years 1985–2010. Models 1 and 2 estimate the probability of receiving a bid including proxies for the extent to which a potential target shares an auditor with potential acquirers. For each firm-year, *Auditor Industry Network* is the percentage of firms in the same two-digit SIC code that share the same auditor. *Auditor Network* is the percentage of all companies that share the same auditor with a firm in a given year. Models 3 and 4 estimate the probability of receiving a bid for a subsample of firms audited by Big-N auditors. Models 5 and 6 estimate the impact of *Auditor Industry Network* on the probability of receiving a bid before and after the passage of SOX. Marginal effects are reported with *t*-statistics in parentheses. Indicator variables for year and industry fixed effects are included. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered by company. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. *Abnormal 1-year Returns* is the excess return from a one-factor model of expected daily returns. *GR dummy* is an indicator equal to one if there is a growth-resource mismatch. *Growth (Sales)* is the three year average rate of change in net sales. *Liquidity* is the average ratio of net liquid assets over book assets of the previous three years. *Leverage* is the average ratio of long-term debt to equity over the previous three years. *Industry Bids* is an indicator equal to one if there was a bid in the company's two-digit SIC code in the previous year. *Target Assets* is the book value of target assets. *Market-to-Book* is the market value of target assets divided by the book value of target assets. *Price-to-Earnings* is the ratio of the share price divided by the per share earnings of the company.

reported models (Model 1 *p*-value=0.17, two-tailed). The coefficient on *Shared Auditor–Different Office* is negative, as expected, but statistically insignificant. Overall, the results indicate that the impact of shared auditors on deal premiums is stronger when the target is smaller, consistent with shared auditors being less likely to protect the interests of smaller target shareholders.

Next, we proxy for auditor quality using the tenure of the shared auditor, as prior literature shows that longer tenured auditors provide higher quality audits (Myers et al., 2003). *Auditor Tenure* is an indicator variable equal to one if the auditor has been the auditor of the acquirer for five years or more. Table 5, Panel C reports the results. We find in each model that the coefficients on *Shared Auditor* and *Shared Auditor Office* are negative and statistically significant indicating reductions in premiums ranging from 8.8% to 19% for shared auditors with shorter tenure. The coefficient on *Shared Auditor* × *Auditor Tenure* and *Shared Auditor Office* × *Auditor Tenure* is positive in each model indicating an offset in the negative effect of shared auditors on deal premiums ranging from 6.6% to 12.7% in Models 1–6. However, the coefficients are statistically significant at conventional levels in three of the six models with two-tailed *p*-values ranging from 0.11 to 0.12 in the remaining models (Models 2–4). The results suggest, although weakly, the negative effect of a shared auditor on deal premium is reduced when an auditor has a longer tenure, consistent with the notion of a longer tenured auditor being less likely to cater to an acquiring firm client. Overall, we find weak evidence to suggest that higher auditor quality mitigates the effect of shared auditors on deal premiums.²⁵

²⁵ In untabulated analysis we also examine the effect of auditor quality on the relation between shared auditors and other deal outcomes, including target and acquirer abnormal announcement returns and deal completion rates. We find that auditor quality, as proxied by target size, has a positive (negative) and statistically significant effect on the relation between shared auditors and target (acquirer) announcement returns consistent with our

4.3. Target announcement returns

We model the effect of shared auditors on target announcement returns as follows:

$$\text{Target CAR} = \alpha + \beta_1 \times \text{Shared Auditor} + \beta_2 \times \text{Controls} + e_i \quad (4)$$

Target CAR is the market-adjusted three day $[-1, 1]$ cumulative abnormal return to the target around the deal announcement. For target announcement returns, we expect β_1 to be negative, consistent with the notion that shared auditors benefit acquirers and that target shareholders respond less favorably through announcement returns. We include only completed deals in this analysis. Control variables included in Eq. (4) are consistent with those control variables included in Eq. (2) and discussed above.

Table 6 reports the results of Eq. (4). In Model 1, the coefficient on *Shared Auditor* indicates that shared auditors are associated with a 1.8% lower target announcement return relative to non-shared-auditor acquisitions, and this effect is statistically significant (p -value < 0.10). In Model 2, the coefficient on *Shared Auditor Office* indicates a 2.8% reduction in target announcement returns when the target and acquirer contract with the same auditor practice office, and this effect is statistically significant (p -value < 0.05). Model 3 reports results including *Shared Auditor–Different Office* to examine the incremental effect of sharing an auditor office. We find the coefficient on *Shared Auditor Office* indicates a 2.7% reduction in target announcement returns (p -value < 0.10). The coefficient on *Shared Auditor–Different Office* is negative as expected, but statistically insignificant. Consistent with the results on deal premiums in Table 5, the shared-auditor effect appears to be driven by those deals in which the target and acquirer contract with the same practice office of the auditor.

The results for the subsample of Big-N-only deals (Models 4–6) are consistent with those reported in Models 1–3. The coefficients on *Shared Auditor* (Model 4) and *Shared Auditor Office* (Models 5 and 6) indicate reductions in target announcement returns ranging from 2% to 4% (p -value < 0.10). This result suggests that shared auditors in the subset of Big-N-only deals appear to benefit acquirers at the expense of targets, and the effect is more pronounced when the target and acquirer share an auditor office. We find the coefficient on *Same City* is negative and statistically significant. The coefficients on control variables are generally consistent with prior literature. That is, the target market-to-book, target run-up, relative size, toehold indicator, geographic proximity of the target to the acquirer, and the number of bidders are negatively associated with the target abnormal return, while indicators for tender offer, hostile deal, and cash only deal are positively associated with the target announcement day return.

4.4. Acquirer announcement returns

We model the effect of shared auditors on acquirer announcement returns as follows:

$$\text{Acquirer CAR} = \alpha + \beta_1 \times \text{Shared Auditor} + \beta_2 \times \text{Controls} + e_i \quad (5)$$

Acquirer CAR is the market-adjusted three day $[-1, 1]$ cumulative abnormal return to the acquirer around the deal announcement. We expect β_1 to be positive, consistent with the notion that shared-auditor acquisitions favor acquirers over targets relative to non-shared-auditor acquisitions. Controls are consistent with Eq. (4) except for the inclusion of *Acquirer Asset Size* and *Acquirer Market-to-Book* and the exclusion of *Relative Size*, *Target Market-to-Book*, *Target ROA*, *Toehold Indicator*, and *Hostile Deal*.

Table 7 reports the results of Eq. (5). Consistent with the analysis of target announcement returns, we include only completed deals in the analysis. In Model 1 we find the coefficient on *Shared Auditor* indicates that acquirer returns are on average 0.65% (rounded to 0.7% in Table 7) higher in deals with shared auditors which represents a 49% ($0.65\% / -1.31\%$, base rate rounded to -1% in Table 2) higher average acquirer announcement return relative to the average non-shared-auditor acquirer abnormal announcement return. This effect is statistically significant (p -value < 0.05). In Models 2 and 3, the coefficient on *Shared Auditor Office* is also positive and statistically significant (p -value < 0.10) and indicates a 76% and 84% relative increase in the acquirer announcement return as compared to a non-shared-auditor deal. The coefficient on *Shared Auditor–Different Office* in Model 3 is positive as expected, but statistically insignificant. The insignificant coefficient on *Shared Auditor–Different Office* again suggests that the shared-auditor effect observed in Model 1 is driven by shared auditor office deals.

Table 7, Models 4–6 report results limited to the sample of within Big-N acquisitions, again with the same specifications of Models 1–3. We find that the coefficient on *Shared Auditor* (*Shared Auditor Office*) is positive in each model, indicating increases to the acquirer announcement return ranging from 0.6% to 0.9%. However the effect is statistically significant at

(footnote continued)

expectation that the impact of shared auditors is stronger (weaker) for lower (higher) quality auditors. We also find that auditor tenure has a positive effect on the relation between shared auditors and target announcement returns, although the positive effect is statistically significant in only two of the six models. The interaction effect of auditor tenure and shared auditors on acquirer announcement returns and completion rates is statistically insignificant. Results are unabridged for brevity. Overall, the results of auditor quality proxies on other deal outcomes are generally consistent in spite of statistical insignificance.

Table 5

Shared auditors and deal premiums.

Panel A – Shared auditors and deal premiums						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N	Big-N	Big-N
<i>Shared Auditor</i>	–0.042**			–0.050***		
(<i>t</i> -Stat)	(–2.29)			(–2.75)		
<i>Shared Auditor Office</i>		–0.077**	–0.080***		–0.102***	–0.108***
		(–2.45)	(–2.58)		(–2.98)	(–3.19)
<i>Shared Auditor–Different Office</i>			–0.019			–0.025
			(–0.85)			(–1.07)
<i>Same City</i>	–0.026	–0.057*	–0.045	–0.017	–0.043	–0.035
	(–0.87)	(–1.71)	(–1.40)	(–0.54)	(–1.13)	(–0.96)
<i>Shared Director</i>	–0.068	–0.066	–0.007	–0.091**	–0.109**	–0.044
	(–1.59)	(–1.26)	(–0.13)	(–2.10)	(–2.16)	(–0.77)
<i>Shared Advisor</i>	0.173	0.056	0.053	0.010	0.007	–0.004
	(0.91)	(0.29)	(0.27)	(0.06)	(0.02)	(–0.01)
<i>Relative Size</i>	–0.015*	–0.011	–0.015	–0.013	–0.010	–0.015
	(–1.79)	(–1.08)	(–1.48)	(–1.62)	(–0.96)	(–1.36)
<i>Value of Transaction</i>	–0.003	–0.006	–0.005	–0.002	–0.004	–0.003
	(–0.74)	(–1.36)	(–1.10)	(–0.44)	(–0.89)	(–0.71)
<i>Target Market-to-Book</i>	–0.020***	–0.017**	–0.017**	–0.017***	–0.014**	–0.015**
	(–2.91)	(–2.23)	(–2.42)	(–2.58)	(–2.02)	(–2.11)
<i>Target ROA</i>	–0.230***	–0.266***	–0.261***	–0.248***	–0.244***	–0.253***
	(–3.20)	(–3.08)	(–3.41)	(–3.47)	(–2.95)	(–3.32)
<i>Run-up (42 days)</i>	0.320***	0.281***	0.292***	0.339***	0.273***	0.285***
	(7.09)	(5.05)	(5.78)	(7.21)	(4.53)	(5.27)
<i>Toehold Indicator</i>	–0.005	0.038	0.016	–0.001	0.050	0.020
	(–0.13)	(0.68)	(0.32)	(–0.02)	(0.88)	(0.40)
<i>Same 2-digit SIC</i>	–0.022	–0.016	–0.027	–0.020	–0.010	–0.018
	(–1.27)	(–0.76)	(–1.36)	(–1.12)	(–0.44)	(–0.88)
<i>Tender Offer</i>	0.068***	0.078**	0.078***	0.082***	0.092***	0.097***
	(2.81)	(2.52)	(2.78)	(3.31)	(2.77)	(3.21)
<i>Hostile Deal</i>	0.038	0.020	0.033	0.044	0.014	0.025
	(1.06)	(0.46)	(0.84)	(1.15)	(0.29)	(0.59)
<i>Target Termination Fee</i>	–0.003	0.008	0.001	–0.003	0.011	0.005
	(–0.17)	(0.36)	(0.03)	(–0.13)	(0.49)	(0.23)
<i>of Bidders</i>	0.070***	0.083***	0.060**	0.043**	0.071**	0.050*
	(2.64)	(2.90)	(2.34)	(2.03)	(2.42)	(1.88)
<i>Cash Only Deal</i>	0.033	0.036	0.033	0.040*	0.036	0.035
	(1.45)	(1.26)	(1.32)	(1.74)	(1.17)	(1.28)
<i>Industry Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	3,128	2,175	2,665	2,759	1,756	2,204
<i>Adj. R-Squared</i>	0.110	0.096	0.105	0.121	0.095	0.110
Panel B – Shared auditors, deal premiums, and target size						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N	Big-N	Big-N
<i>Shared Auditor</i>	–0.062**			–0.078***		
(<i>t</i> -Stat)	(–2.33)			(–2.92)		
<i>Shared Auditor Office</i>		–0.137***	–0.130***		–0.177***	–0.165***
		(–3.49)	(–3.39)		(–4.21)	(–4.01)
<i>Shared Auditor–Different Office</i>			–0.016			–0.024
			(–0.74)			(–1.02)
<i>Shared Auditor × Large Target</i>	0.049			0.064*		
	(–1.37)			(1.79)		
<i>Shared Auditor Office × Large Target</i>		0.150**	0.129**		0.174***	0.140**
		(2.47)	(2.17)		(2.63)	(2.16)
<i>Large Target</i>	–0.026	–0.046**	–0.039*	–0.029	–0.037	–0.027
	(–1.30)	(–2.07)	(–1.96)	(–1.38)	(–1.51)	(–1.26)
<i>Same City</i>	–0.023	–0.049	–0.039	–0.013	–0.032	–0.027
	(–0.77)	(–1.46)	(–1.20)	(–0.42)	(–0.82)	(–0.74)
<i>Shared Director</i>	–0.042	–0.061	–0.018	–0.083*	–0.104**	–0.063
	(–0.87)	(–1.15)	(–0.32)	(–1.67)	(–2.07)	(–1.07)
<i>Shared Advisor</i>	0.171	0.052	0.060	0.003	0.010	0.007

Table 5 (continued)

Panel B – Shared auditors, deal premiums, and target size						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N	Big-N	Big-N
	(0.89)	(0.26)	(0.31)	(0.02)	(0.03)	(0.02)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Table 5 Panel A controls	Yes	Yes	Yes	Yes	Yes	Yes
N	3,128	2,175	2,665	2,759	1,756	2,204
Adj. R-Squared	0.110	0.097	0.107	0.121	0.097	0.111
Panel C – Shared auditors, deal premiums, and auditor tenure at acquirer						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N	Big-N	Big-N
<i>Shared Auditor</i>	–0.088***			–0.094***		
(<i>t</i> -Stat)	(–2.60)			(–2.75)		
<i>Shared Auditor Office</i>		–0.155***	–0.153***		–0.190***	–0.187***
		(–2.65)	(–2.69)		(–3.34)	(–3.40)
<i>Shared Auditor–Different Office</i>			–0.018			–0.024
			(–0.80)			(–1.06)
<i>Shared Auditor × Auditor Tenure</i>	0.071*			0.066		
	(1.73)			(1.59)		
<i>Shared Auditor Office × Auditor Tenure</i>		0.108	0.102		0.127*	0.120*
		(1.58)	(1.54)		(1.90)	(1.84)
<i>Auditor Tenure</i>	–0.033	–0.043*	–0.037*	–0.021	–0.033	–0.029
	(–1.54)	(–1.76)	(–1.74)	(–0.93)	(–1.27)	(–1.25)
<i>Same City</i>	–0.024	–0.058*	–0.046	–0.014	–0.038	–0.031
	(–0.78)	(–1.73)	(–1.44)	(–0.44)	(–1.01)	(–0.87)
<i>Shared Director</i>	–0.044	–0.064	–0.021	–0.085*	–0.110**	–0.068
	(–0.89)	(–1.21)	(–0.36)	(–1.69)	(–2.20)	(–1.17)
<i>Shared Advisor</i>	0.170	0.040	0.049	–0.002	–0.027	–0.023
	(0.89)	(0.20)	(0.25)	(–0.01)	(–0.09)	(–0.07)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Table 5 Panel A controls	Yes	Yes	Yes	Yes	Yes	Yes
N	3,124	2,129	2,607	2,755	1,752	2,200
Adj. R-Squared	0.110	0.095	0.104	0.121	0.096	0.111

This table reports the results of regressions of deal premiums on indicators for the target and acquirer sharing the same auditor and same auditor office in Panel A; it further reports the results of regressions of deal premiums on interaction of indicators for shared auditor with proxies for auditor quality including: (i) large target size indicator in Panel B; (ii) long auditor tenure (with acquirer) indicator in Panel C. All continuous variables are winsorized at 1% and 99% levels. *Premium* is the percentage difference between the bid price offered and the target's trading price four weeks prior, as calculated by SDC. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Value of Transaction* is the deal value reported by SDC in billions. *Target Market-to-Book* is the market value of target assets divided by the book value of target assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Run-up* is the market-adjusted change in the target's stock price from forty-two trading days before announcement to four days before announcement. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. Year and industry indicators based on two-digit SIC codes control for year and industry fixed effects. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively.

conventional levels (p -value=0.08) only in Model 4. The statistical significance of the coefficients on *Shared Auditor Office* in Models 5 and 6 is weak (p -values=0.18 and 0.12, two-tailed, respectively). The coefficient on *Shared Auditor–Different Office* is positive, however statistically insignificant. We find the results on control variables are largely consistent with prior studies on acquirer announcement returns. The value of the transaction, the acquirer market-to-book, and target termination fee are all negatively associated with the acquirer announcement day returns, while indicators for tender offer and cash only deal are positively associated with acquirer announcement day returns. Taken as a whole, we find some,

Table 6
Shared auditors and target CARs.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N Deals	Big-N Deals	Big-N Deals
<i>Shared Auditor</i>	–0.018*			–0.020*		
(<i>t</i> -Stat)	(–1.80)			(–1.95)		
<i>Shared Auditor Office</i>		–0.028*	–0.027*		–0.040**	–0.040***
		(–1.76)	(–1.67)		(–2.27)	(–2.25)
<i>Shared Auditor–Different Office</i>			–0.010			–0.010
			(–0.79)			(–0.75)
<i>Same City</i>	–0.050***	–0.056***	–0.051***	–0.056***	–0.067***	–0.061***
	(–2.92)	(–2.83)	(–2.62)	(–3.00)	(–3.05)	(–2.81)
<i>Shared Director</i>	–0.029	–0.011	–0.005	–0.030	–0.005	0.003
	(–1.20)	(–0.38)	(–0.16)	(–1.09)	(–0.18)	(0.08)
<i>Shared Advisor</i>	0.070	0.170	0.175	0.067	0.234	0.237
	(0.95)	(0.90)	(0.93)	(0.65)	(1.03)	(1.05)
<i>Relative Size</i>	–0.019**	–0.017*	–0.019**	–0.018**	–0.016*	–0.018**
	(–2.24)	(–1.96)	(–2.13)	(–2.18)	(–1.92)	(–2.10)
<i>Value of Transaction</i>	–0.004	–0.008***	–0.004	–0.003	–0.007**	–0.003
	(–1.22)	(–2.79)	(–1.29)	(–1.01)	(–2.32)	(–0.94)
<i>Target Market-to-Book</i>	–0.013***	–0.014***	–0.012***	–0.014***	–0.013***	–0.012***
	(–4.26)	(–3.93)	(–3.78)	(–4.07)	(–3.40)	(–3.32)
<i>Target ROA</i>	0.021	0.003	0.013	0.008	–0.022	–0.008
	(0.83)	(0.08)	(0.47)	(0.29)	(–0.56)	(–0.25)
<i>Run-up (42 days)</i>	–0.056***	–0.053**	–0.060***	–0.053**	–0.034	–0.047*
	(–2.91)	(–2.21)	(–2.70)	(–2.40)	(–1.21)	(–1.87)
<i>Toehold Indicator</i>	–0.032*	–0.044*	–0.042**	–0.024	–0.027	–0.031
	(–1.94)	(–1.84)	(–2.00)	(–1.34)	(–1.09)	(–1.42)
<i>Same 2-digit SIC</i>	0.003	–0.011	–0.004	–0.000	–0.010	–0.002
	(0.28)	(–0.94)	(–0.35)	(–0.04)	(–0.82)	(–0.20)
<i>Tender Offer</i>	0.071***	0.061***	0.066***	0.074***	0.074***	0.079***
	(5.11)	(3.53)	(4.21)	(5.09)	(3.90)	(4.57)
<i>Hostile Deal</i>	0.091**	0.069	0.064	0.081**	0.056	0.053
	(2.37)	(1.30)	(1.35)	(2.04)	(0.97)	(1.08)
<i>Target Termination Fee</i>	–0.000	0.001	–0.001	–0.000	0.002	–0.000
	(–0.14)	(1.04)	(–0.36)	(–0.36)	(1.29)	(–0.15)
<i>of Bidders</i>	–0.045***	–0.036**	–0.030**	–0.045***	–0.036**	–0.029**
	(–4.38)	(–2.14)	(–2.13)	(–4.09)	(–1.98)	(–1.99)
<i>Cash Only Deal</i>	0.052***	0.048***	0.056***	0.052***	0.048***	0.059***
	(3.99)	(3.08)	(4.06)	(3.81)	(2.76)	(3.82)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2,725	1,927	2,372	2,395	1,535	1,939
Adj. R-Squared	0.117	0.105	0.119	0.123	0.115	0.132

This table reports the results of least-squares regressions of target abnormal announcement returns on indicators for the target and acquirer sharing the same auditor. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. The dependent variable, *Target CAR* is the market-adjusted three day abnormal return to the target around the deal announcement [–1,1]. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Value of Transaction* is the deal value reported by SDC in billions. *Target Market-to-Book* is the market value of target assets divided by the book value of target assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Run-up (42 days)* is the market-adjusted change in the target's stock price from forty-two trading days before announcement to four days before announcement. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. Year and industry indicators based on two-digit SIC codes control for year and industry fixed effects.

albeit statistically weak evidence, that shared auditor offices positively impact the acquirer announcement return, consistent with shared auditors' offices benefiting acquirers.²⁶

²⁶ In untabulated regressions we also examine the effect of shared auditors on total acquisition gains (i.e., target plus acquirer announcement day value-weighted returns) as in Cai et al. (2014). We find some evidence of shared auditors being associated with total acquisition gains. Our results suggest that this benefit of uncertainty reduction accrues to the acquiring firm and that this benefit is driven by deals that involve shared auditor offices.

Table 7
Shared auditors and acquirer CARs.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N Deals	Big-N Deals	Big-N Deals
<i>Shared Auditor</i> (t-Stat)	0.007** (2.17)			0.006* (1.75)		
<i>Shared Auditor Office</i>		0.010* (1.80)	0.011* (1.95)		0.008 (1.33)	0.009 (1.53)
<i>Shared Auditor–Different Office</i>			0.005 (1.16)			0.005 (1.08)
<i>Same City</i>	–0.004 (–0.63)	–0.003 (–0.49)	–0.003 (–0.51)	–0.003 (–0.52)	–0.004 (–0.51)	–0.003 (–0.35)
<i>Shared Director</i>	0.007 (0.90)	0.005 (0.54)	0.003 (0.32)	0.004 (0.47)	0.002 (0.22)	–0.001 (–0.14)
<i>Shared Advisor</i>	–0.012 (–0.53)	0.018 (0.28)	0.003 (0.05)	–0.009 (–0.32)	0.005 (0.06)	–0.010 (–0.17)
<i>Value of Transaction</i>	–0.001 (–1.51)	–0.002** (–2.00)	–0.001 (–1.31)	–0.002* (–1.65)	–0.002* (–1.70)	–0.001 (–0.82)
<i>Acquirer Asset Size</i>	0.001** (2.01)	0.001 (1.14)	0.001 (1.18)	0.001 (1.60)	0.001 (1.08)	0.001 (1.29)
<i>Acquirer Market-to-Book</i>	–0.003** (–2.27)	–0.003** (–2.54)	–0.002** (–2.02)	–0.002* (–1.91)	–0.003** (–2.07)	–0.002 (–1.52)
<i>Same 2-digit SIC</i>	0.001 (0.29)	–0.004 (–1.23)	–0.002 (–0.50)	0.002 (0.51)	–0.005 (–1.08)	–0.002 (–0.53)
<i>Tender Offer</i>	0.005 (1.46)	0.008* (1.81)	0.010** (2.38)	0.004 (0.96)	0.004 (0.73)	0.007 (1.52)
<i>Target Termination Fee</i>	–0.001* (–1.74)	–0.000 (–0.19)	–0.001 (–1.62)	–0.001* (–1.81)	–0.000 (–0.41)	–0.001** (–2.05)
<i>of Bidders</i>	–0.001 (–0.13)	0.002 (0.30)	–0.002 (–0.27)	–0.001 (–0.15)	–0.001 (–0.11)	–0.004 (–0.64)
<i>Cash Only Deal</i>	0.022*** (6.70)	0.026*** (6.92)	0.024*** (6.90)	0.020*** (5.77)	0.026*** (6.06)	0.023*** (5.90)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	2,771	1,956	2,418	2,437	1,558	1,977
Adj. R-Squared	0.060	0.070	0.070	0.057	0.065	0.066

This table reports the results of least-squares regressions of acquirer abnormal announcement returns on indicators for the target and acquirer sharing the same auditor. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. The dependent variable, *Acquirer CAR*, is the market-adjusted three day abnormal return to the acquirer around the deal announcement [–1, 1]. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. *Value of Transaction* is the deal value reported by SDC in billions. *Acquirer Asset Size* is the book value of acquirer assets. *Acquirer Market-to-Book* is the market value of acquirer assets divided by the book value of acquirer assets. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. Year and industry indicators based on two-digit SIC codes control for year and industry fixed effects.

4.5. Completion rates

We next examine the impact of shared auditors on deal completion rates by estimating the following probit regression:

$$\Pr(\text{Completion} = 1|X) = F(\alpha + \beta_1 \times \text{Shared Auditor Proxy}_i + \beta_2 \times \text{Controls}_i). \quad (6)$$

Completion is an indicator variable equal to one if the deal is completed, zero otherwise. *Shared Auditor* is as previously defined. If shared auditors provide informational advantages to bidders, then acquisitions with shared auditors should have higher completion rates relative to non-shared-auditor acquisitions. This is consistent with shared auditors improving the due diligence process for the acquirer. Therefore, we expect the coefficient on *Shared Auditor* (β_1) to be positive and statistically significant. Control variables included in Eq. (6) are consistent with those included in Eq. (5) with the exception of excluding *Acquirer Asset Size* and *Acquirer Market-to-Book*, and including *Toehold Indicator* and *Hostile Deal*.

Table 8 reports the results of Eq. (6). We find that in each model the coefficient on *Shared Auditor* and *Shared Auditor Office* is positive and statistically significant (p -value < 0.01). In Model 1, the coefficient on *Shared Auditor* indicates that shared auditors increase the probability of deal completion by 3.3% which is a 4.0% relative increase in the unconditional probability of deal completion of 82%. The effect of shared auditors is more pronounced when the target and acquirer contract with the same auditor practice office. In Model 2 (3), the coefficient on *Shared Auditor Office* indicates a 5.0% (5.2%)

Table 8
Shared auditors and deal completion.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	All Deals	All Deals	All Deals	Big-N Deals	Big-N Deals	Big-N Deals
<i>Shared Auditor</i>	0.033**			0.028*		
(<i>t</i> -Stat)	(2.34)			(1.95)		
<i>Shared Auditor Office</i>		0.050**	0.052***		0.054***	0.056***
		(2.50)	(2.62)		(2.60)	(2.69)
<i>Shared Auditor–Different Office</i>			0.025*			0.025*
			(1.71)			(1.65)
<i>Same City</i>	0.056**	0.071**	0.078**	0.031	0.053	0.060*
	(2.00)	(2.18)	(2.45)	(1.12)	(1.53)	(1.76)
<i>Shared Director</i>	–0.003	0.038	0.004	–0.011	0.021	–0.021
	(–0.09)	(1.28)	(0.13)	(–0.31)	(0.62)	(–0.54)
<i>Shared Advisor</i>	0.094**	–0.025	–0.026	0.128***	0.105***	0.110***
	(2.12)	(–0.21)	(–0.22)	(18.22)	(13.89)	(11.69)
<i>Value of Transaction</i>	–0.010***	–0.010**	–0.009**	–0.011***	–0.010**	–0.010**
	(–2.70)	(–2.23)	(–2.34)	(–3.00)	(–2.36)	(–2.56)
<i>Same 2-digit SIC</i>	0.036***	0.035**	0.035**	0.040***	0.039**	0.041***
	(2.62)	(2.36)	(2.55)	(2.76)	(2.35)	(2.62)
<i>Toehold Indicator</i>	–0.057**	–0.074**	–0.082**	–0.054*	–0.094**	–0.092**
	(–1.98)	(–2.04)	(–2.34)	(–1.88)	(–2.36)	(–2.45)
<i>Tender Offer</i>	0.137***	0.098***	0.103***	0.131***	0.101***	0.107***
	(11.39)	(7.29)	(8.58)	(10.58)	(7.33)	(8.31)
<i>Hostile Deal</i>	–0.549***	–0.549***	–0.546***	–0.535***	–0.532***	–0.530***
	(–9.33)	(–6.85)	(–7.89)	(–8.53)	(–6.15)	(–7.14)
<i>Target Termination Fee</i>	0.008***	0.007***	0.007***	0.007***	0.007***	0.007***
	(3.99)	(3.61)	(3.91)	(3.95)	(3.30)	(3.61)
<i>of Bidders</i>	–0.165***	–0.185***	–0.165***	–0.155***	–0.175***	–0.157***
	(–9.52)	(–9.29)	(–9.08)	(–8.45)	(–8.55)	(–8.24)
<i>Cash Only Deal</i>	–0.008	0.002	–0.006	–0.019	–0.016	–0.025
	(–0.49)	(0.09)	(–0.34)	(–1.08)	(–0.76)	(–1.28)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	3,294	2,276	2,789	2,875	1,815	2,281
Pseudo <i>R</i> -Squared	0.176	0.193	0.183	0.186	0.219	0.201

This table reports marginal effects of probit regressions of deal completion on indicators for the target and acquirer sharing the same auditor. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. The dependent variable, *Completed*, is an indicator variable equal to one if a bid is completed, zero otherwise. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. *Value of Transaction* is the deal value reported by SDC in billions. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. Year and industry indicators based on two-digit SIC codes control for year and industry fixed effects.

higher likelihood of deal completion which is a 6.1% relative increase in the unconditional probability of deal completion. Models 4–6 limit the sample to Big-N-only bids and the coefficient on *Shared Auditor* and *Shared Auditor Office* indicate an increase in the probability of completion of 2.8–5.6%. The coefficient on *Shared Auditor–Different Office* is also positive and statistically significant in both Models 3 and 6 (*p*-value < 0.10) indicating increases in deal completion probabilities of 2.5% in both the full sample and Big-N-only sample of acquisitions. While the results in Tables 5–7 suggest shared auditors with different offices do not impact premiums and announcement returns, the results in Table 8 suggest shared auditors in different offices increase the probability of deal completion. Overall, the higher completion rate for shared-auditor acquisitions suggests that shared auditors provide informational advantages to bidders, and targets are unable to reject the lower value bids.²⁷

²⁷ In untubulated supplemental analysis we examine the impact of each of the Big-N audit firms to determine whether the shared-auditor effect is more pronounced in a given firm or if the results are consistent across all Big-N audit firms. We find when excluding deals with Arthur Andersen the shared-auditor effect on target announcement returns is weaker and the *Shared Auditor* or *Shared Auditor Office* coefficient estimates are statistically insignificant. We also find that Arthur Andersen appears to have the strongest negative effect on premium. However, overall the conclusion that shared auditors influence deal outcomes appears to be consistent across audit firms.

5. Effect of the Sarbanes–Oxley Act on shared-auditor deal outcomes

A long line of research has examined the impact of the Sarbanes–Oxley Act of 2002 (SOX) on auditor behavior. Table 4 indicates that auditor networks have less of an effect on the probability of receiving a bid after SOX. However, the effect is still statistically significant. As SOX strengthened auditor independence rules and reduced the types of services auditors can provide for a fee, we examine whether SOX changed the impact of shared auditors on acquisition outcomes. We expect the relation between shared auditors and acquisition outcomes to be smaller post-SOX. Therefore, we re-estimate Eqs. (2)–(6) and interact *Shared Auditor* with indicator variables for the pre- and post-SOX periods (*Pre-SOX* and *Post-SOX*).

Table 9 reports the results of this analysis. Panel A reports the results on premiums and target announcement returns. For brevity, we only report results for our variables of interest. In all deal premium analyses (Models 1–6) the coefficient on *Shared Auditor (Shared Auditor Office) × Pre-SOX* is negative and statistically significant. The coefficient on *Shared Auditor (Shared Auditor Office) × Post-SOX* is negative in all models as expected, but statistically significant (p -value < 0.05) only in the subset of Big-N deals at the auditor–office level (Models 5 and 6). The coefficient on *Shared Auditor–Different Office* is statistically insignificant consistent with results in Table 5 and the findings that the shared-auditor effect on deal premiums is driven by shared auditor offices. However, this variable is not interacted with *Pre-SOX* or *Post-SOX*. Shared auditors appear to influence deal premiums in the post-SOX period only when the target and acquirer share the same Big-N auditor office.

With respect to target announcement returns, (Table 9, Panel A, Models 7–12), we find that the coefficients on *Shared Auditor × Pre-SOX* and *Shared Auditor Office × Pre-SOX* are negative and statistically significant (p -value < 0.10) in five of six models indicating lower target announcement returns by 2.6–4.3%. The coefficients on *Shared Auditor × Post-SOX* are statistically insignificant in Models 7 and 10. The coefficients on *Shared Auditor Office × Post-SOX* are negative and statistically significant in three of four models examining the effects of shared auditor offices (Models 8, 9, 11, and 12) indicating reductions in target announcement returns of approximately 3.2%. The coefficients on *Shared Auditor–Different Office* are statistically insignificant. Overall, the effect of shared auditors on target announcement returns appears weaker post-SOX relative to pre-SOX. However, shared auditor offices continue to have a negative effect on target announcement returns post-SOX.

Table 9, Panel B reports the results of shared auditors interacted with indicator variables for pre- and post-SOX on acquirer returns (Models 1–6) and deal completion (Models 7–12). With respect to acquirer announcement returns, the coefficient on *Shared Auditor (Shared Auditor Office) × Pre-SOX* is positive and statistically significant (p -value < 0.10) in four of six models, while the coefficient on *Shared Auditor (Shared Auditor Office) × Post-SOX* is positive in all models but statistically insignificant. Therefore, we find that the positive effect of shared auditors on acquirer announcement returns is found only in the pre-SOX period. With respect to deal completion (Table 9, Panel B, Models 7–12), we find that the coefficient on *Shared Auditor (Shared Auditor Office) × Pre-SOX* is positive and statistically significant in four of the six models, while the coefficient on *Shared Auditor (Shared Auditor Office) × Post-SOX* is positive in all models, but statistically insignificant. The coefficient on *Shared Auditor–Different Office* is positive and statistically significant indicating a shared auditor across offices increases the probability of deal completion.

Overall, the results suggest that shared auditors had a greater influence on acquisition outcomes prior to SOX relative to after SOX. However, shared auditors are still associated with lower premiums and target announcement returns in the post-SOX period, particularly when sharing the same auditor practice office.

6. Selection issues in multivariate analysis

The results in Table 4 suggest that auditors facilitate bidding among their clients, and sharing an auditor increases a potential target's likelihood of receiving a bid. If auditors influence bidding based on economically important variables (e.g., they have superior information about target assets and liabilities), then targets in bids with shared auditors may be systematically different from targets in bids without shared auditors. That is, the sample of bids may not be randomly selected. In fact, we expect that shared auditors have incentive to cater to bidders. If shared auditors identify superior targets, the relation between shared auditors and deal outcomes may result from the fact that deals more favorable to acquirers materialize when there is a shared auditor. However, these may be the precise systematic differences that shared auditors can identify. Therefore, controlling for them may not be appropriate.²⁸

Nonetheless, we address self-selection concerns with a Heckman (1979) correction.²⁹ In the first stage, we model the probability of receiving a bid including proxies for auditors' networks and several other determinants of receiving a bid, consistent with Model 2 of Table 4. Results are qualitatively similar using auditors' industry networks in the first stage. We then use the estimates of this probit regression to estimate the inverse Mills ratio. Finally, we include the inverse Mills ratio

²⁸ We do not incorporate selection into our main analysis as selection issues with shared auditors in M&A appear to be less of a concern as compared to shared advisors in M&A deals (Agrawal et al., 2013). This is because both an acquirer and a target make the explicit choice to have a shared investment bank advise each of them for a specific transaction. In contrast, a shared auditor is a result of both a target and acquirer independently contracting with an audit firm to receive audit services prior to a bid being announced. As we require an auditor to provide audit services to a target and acquirer for the fiscal year preceding a bid announcement, the selection concerns are reduced.

²⁹ Results are robust to using a propensity score methodology rather than a Heckman (1979) correction consistent with Rosenbaum and Rubin (1983) and Dehejia and Wahba (2002).

D.S. Dhaliwal et al. / Journal of Accounting and Economics 61 (2016) 49–76

71

71

[illegible]

Table 9 (continued)

Panel B – Shared auditors, SOX, acquirer abnormal returns, and bid completion												
Variables	Acquirer CAR						Completed					
	All Deals			Big-N Deals			All Deals			Big-N Deals		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
N	2,771	1,956	2,418	2,437	1,652	2,104	3,294	2,142	2,621	2,874	1,813	2,280
Adj. R-Squared	0.055	0.064	0.062	0.055	0.061	0.060						
Pseudo R-Squared							0.147	0.157	0.155	0.154	0.170	0.167

This table reports the coefficient estimates of regressions of several deal outcomes on interactions of indicators for shared auditors and indicators for the years before and after the enactment of the Sarbanes–Oxley Act of 2002. In Models 1–6 of Panel A, the first dependent variable, *Premium*, is the percentage difference between the bid offered and the target's trading price four weeks prior. The second dependent variable in Models 7–12 of Panel A, *Target CAR* is the market-adjusted three day abnormal return to the target around the deal announcement [−1, 1]. In Models 1–6 of Panel B, the dependent variable, *Acquirer CAR*, is the market-adjusted three day abnormal return to the acquirer around the deal announcement [−1, 1]. The dependent variable in Models 7–12 of Panel B is *Completed*, a binary variable equal to one if a bid is completed, zero otherwise. Probit regressions are used to model the probability of bid completion. Marginal effects are reported and account for the effects of interactions. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive audit services from the same firm prior to bid announcement. *Shared Auditor Office* equals one if the target and acquirer contract for audit services with the same office of an audit firm. *Pre-SOX* (*Post-SOX*) is an indicator equal to one for bids announced before (after) the end of 2002. Control variables consistent with models reported in the previous tables are included but not tabulated for brevity. Time indicators control for effects related to the end of the internet bubble recession (2000–2002) and the financial crisis (2007–2008). These indicator variables capture recessionary periods as defined by the National Bureau of Economic Research (NBER) surrounding the Sarbanes–Oxley Act. All continuous variables are winsorized at the 1% and 99% level. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively.

Table 10
Acquisition outcomes, shared auditors, and selection correction.

Variables	Premium			Target CAR			Acquirer CAR			Completed		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
<i>Shared Auditor</i> (t-Stat)	−0.047*** (−2.61)			−0.015 (−1.43)			0.007* (1.93)			0.178** (2.37)		
<i>Shared Auditor Office</i>		−0.099*** (−2.85)	−0.102*** (−3.01)		−0.044*** (−2.69)	−0.041** (−2.50)		0.009 (1.50)	0.010* (1.65)		0.352** (2.11)	0.359** (2.19)
<i>Shared Auditor–Different Office</i>			−0.023 (−1.02)			−0.009 (−0.67)			0.006 (1.48)			0.191** (2.04)
<i>Inverse Mills Ratio</i>	1.389*** (3.24)	1.463*** (2.81)	1.351*** (2.97)	0.533** (2.25)	0.618** (2.27)	0.639*** (2.63)	−0.150* (−1.95)	−0.168* (−1.93)	−0.121 (−1.53)			
<i>Same City</i>	−0.015 (−0.49)	−0.052 (−1.49)	−0.034 (−1.02)	−0.047*** (−2.69)	−0.057*** (−2.96)	−0.050** (−2.54)	−0.004 (−0.63)	−0.002 (−0.24)	−0.002 (−0.27)	0.136 (1.00)	0.218 (1.30)	0.244 (1.47)
<i>Shared Director</i>	−0.064 (−1.44)	−0.051 (−0.92)	0.006 (0.10)	−0.016 (−0.58)	0.021 (0.72)	0.024 (0.73)	0.007 (0.77)	0.003 (0.33)	0.001 (0.11)	−0.289* (−1.87)	−0.045 (−0.21)	−0.217 (−1.14)
<i>Shared Advisor</i>	0.036 (0.24)	0.060 (0.26)	0.060 (0.25)	0.068 (0.66)	0.225 (1.01)	0.227 (1.02)	−0.007 (−0.26)	0.007 (0.08)	−0.011 (−0.19)	0.458 (0.74)	−0.185 (−0.20)	−0.216 (−0.23)
Deal Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,776	1,892	2,336	2,411	1,660	2,065	2,455	1,683	2,103	2,909	1,970	2,434
Adj. R-Squared	0.109	0.095	0.105	0.118	0.115	0.130	0.061	0.070	0.071			
ρ										−0.244	−0.289	−0.217
LR Test p-value										0.361	0.359	0.422

This table reports the coefficient estimates of regressions of several deal outcomes on indicators for shared auditors, correcting for sample selection. In models of premiums and announcement returns, the inverse Mills ratio corrects for selection bias. The inverse Mills ratio is derived from a probit model of the probability of receiving a bid (Table 4, Model 2). Models 10–12 present coefficient estimates from a bivariate probit model with sample selection, which corrects for sample selection in the estimates of bid completion. The LR test is a chi-squared test of independence of errors between the selection equation and the outcome (completion) equation. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. Several deal characteristics are included but not reported for brevity. These controls are the same as those used in previous models and include the following: *Value of Transaction* is the deal value reported by SDC in billions. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *Run-up (42 days)* is the market-adjusted change in the target's stock price from forty-two days before announcement to four days before announcement. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Target (Acquirer) Market-to-Book* is the market value of target (acquirer) assets divided by the book value of target (acquirer) assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Acquirer Assets* is the book value of acquirer assets. *Premium* is the percentage difference between the bid price offered and the target's trading price four weeks prior. *Acquirer CAR* is the market-adjusted three day cumulative abnormal return to the acquirer around the deal announcement [−1, 1]. *Target CAR* is the market-adjusted three day cumulative abnormal return to the target around the deal announcement [−1, 1]. *Completed* is an indicator variable equal to one if a bid is completed, zero otherwise. The ρ is the correlation between the unobserved determinants of the propensity to receive a bid and the unobserved determinants of the bid completion rate.

to remove selection bias in regressions of bid premiums, target announcement returns, and acquirer announcement returns. We use bivariate probit models with sample selection to correct for bias in models of bid completion. We report the results of a likelihood ratio (LR) test of independence of the equations of receiving and completing a bid, which is analogous to a test of significance of the coefficient on the inverse Mills ratio in the Heckman model.

We note that proper identification of the Heckman model entails valid instruments to be included in the first stage equation; i.e., relevant instrumental variables that are excluded in the second stage, because identification otherwise rests on the functional form of the inverse Mills ratio (Greene, 2012; Puhani, 2000; Sartori, 2003). Our first instrument in the first-stage probit regression (of the probability of receiving a bid) is *Auditor Network*. As previously discussed, we expect an auditor's client network to impact the likelihood of a client receiving a bid (i.e., it is a relevant instrument). Moreover, we exclude this variable in the second-stage regressions of deal outcomes, because we do not expect the network to directly impact deal outcomes beyond having a shared auditor, which is already included as an independent endogenous variable in regressions of deal outcomes. We also use as excluded instruments *GR dummy*, *Growth (Sales)*, *Liquidity*, *Leverage*, and

Table 11

Shared auditors and various measures of bid premiums.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Variables	20-day Premium		30-day Premium		40-day Premium		50-day Premium		60-day Premium	
<i>Shared Auditor</i>	−0.062***		−0.059***		−0.048***		−0.047***		−0.044**	
(<i>t</i> -Stat)	(−3.38)		(−3.11)		(−2.66)		(−2.58)		(−2.10)	
<i>Shared Auditor Office</i>		−0.115***		−0.111***		−0.062*		−0.045		−0.079*
		(−3.48)		(−3.30)		(−1.89)		(−1.20)		(−1.85)
<i>Same City</i>	−0.021	−0.054	−0.053	−0.096**	−0.058*	−0.097**	−0.053	−0.087**	−0.054	−0.102**
	(−0.65)	(−1.39)	(−1.62)	(−2.45)	(−1.77)	(−2.51)	(−1.62)	(−2.21)	(−1.42)	(−2.33)
<i>Shared Director</i>	−0.093**	−0.115**	−0.127***	−0.156***	−0.051	−0.076	−0.089*	−0.107*	−0.097**	−0.134**
	(−2.25)	(−2.34)	(−3.08)	(−3.06)	(−1.09)	(−1.37)	(−1.89)	(−1.67)	(−2.10)	(−2.14)
<i>Shared Advisor</i>	−0.016	−0.002	−0.009	−0.019	−0.011	−0.141	0.034	−0.084	−0.018	−0.078
	(−0.11)	(−0.01)	(−0.07)	(−0.09)	(−0.08)	(−0.50)	(0.24)	(−0.32)	(−0.14)	(−0.36)
<i>Relative Size</i>	−0.011	−0.010	−0.012	−0.013	−0.021**	−0.023	−0.020**	−0.020	−0.025**	−0.023
	(−1.48)	(−0.92)	(−1.57)	(−1.18)	(−2.31)	(−1.55)	(−2.23)	(−1.45)	(−2.26)	(−1.44)
<i>Value of Transaction</i>	−0.006	−0.010**	−0.003	−0.008*	−0.001	−0.007	−0.003	−0.008*	−0.002	−0.007
	(−1.60)	(−2.20)	(−0.62)	(−1.77)	(−0.23)	(−1.54)	(−0.71)	(−1.81)	(−0.52)	(−1.53)
<i>Target Market-to-Book</i>	−0.021***	−0.018**	−0.019***	−0.016**	−0.015**	−0.010	−0.016**	−0.013	−0.018**	−0.016
	(−3.24)	(−2.51)	(−2.85)	(−2.04)	(−2.14)	(−1.23)	(−2.19)	(−1.49)	(−2.00)	(−1.46)
<i>Target ROA</i>	−0.263***	−0.285***	−0.298***	−0.331***	−0.263***	−0.322***	−0.180***	−0.273***	−0.152*	−0.238**
	(−3.43)	(−3.15)	(−3.86)	(−3.54)	(−3.53)	(−3.52)	(−2.67)	(−3.19)	(−1.89)	(−2.45)
<i>Run-up (42 days)</i>	0.301***	0.276***	0.574***	0.569***	0.863***	0.857***	0.944***	0.930***	0.885***	0.844***
	(6.36)	(4.43)	(11.86)	(8.58)	(18.16)	(13.97)	(20.02)	(15.03)	(17.51)	(13.20)
<i>Toehold Indicator</i>	−0.023	−0.046	−0.000	−0.009	−0.022	−0.029	−0.007	−0.012	0.009	0.027
	(−0.70)	(−0.93)	(−0.01)	(−0.18)	(−0.65)	(−0.55)	(−0.19)	(−0.22)	(0.23)	(0.41)
<i>Same 2-digit SIC</i>	−0.007	0.014	−0.004	0.022	−0.002	0.018	0.020	0.048**	0.011	0.038
	(−0.40)	(0.58)	(−0.22)	(0.94)	(−0.10)	(0.80)	(1.19)	(2.08)	(0.56)	(1.43)
<i>Tender Offer</i>	0.061***	0.061*	0.049**	0.059*	0.032	0.039	0.034	0.049	0.019	0.046
	(2.58)	(1.94)	(2.09)	(1.86)	(1.49)	(1.35)	(1.55)	(1.59)	(0.81)	(1.39)
<i>Hostile Deal</i>	0.105***	0.078*	0.103***	0.084*	0.096***	0.065	0.083**	0.070	0.111***	0.080*
	(2.86)	(1.65)	(2.84)	(1.81)	(2.87)	(1.50)	(2.37)	(1.56)	(2.90)	(1.68)
<i>Target Termination Fee</i>	−0.000	0.000	−0.000	0.000	−0.000	0.000	0.000	0.000	0.000	0.001**
	(−0.29)	(0.69)	(−0.43)	(0.61)	(−0.35)	(1.17)	(0.37)	(1.60)	(1.17)	(2.21)
<i>of Bidders</i>	−0.030*	−0.017	−0.023	−0.006	−0.020	−0.000	−0.019	−0.004	−0.025	−0.013
	(−1.74)	(−0.68)	(−1.19)	(−0.18)	(−1.15)	(−0.01)	(−1.15)	(−0.16)	(−1.35)	(−0.55)
<i>Cash Only Deal</i>	0.034	0.042	0.046**	0.041	0.048**	0.052*	0.057**	0.057*	0.064***	0.053
	(1.51)	(1.32)	(2.07)	(1.32)	(2.25)	(1.72)	(2.57)	(1.80)	(2.73)	(1.59)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2,759	2,214	2,759	2,214	2,759	2,214	2,758	2,213	2,758	2,213
<i>R</i> -squared	0.157	0.149	0.226	0.219	0.318	0.314	0.333	0.328	0.298	0.293
Adj. <i>R</i> -Squared	0.131	0.115	0.202	0.188	0.296	0.287	0.313	0.302	0.276	0.265

This table reports the results of regressions of deal premiums on indicators for the target and acquirer sharing the same Big-N auditor and same Big-N auditor office. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the acquirer level. *t*-Statistics are reported in parentheses. The *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. *Premium* is the percentage difference between the bid price offered and the target's trading price prior to the bid. Premiums are estimated with target prices 20, 30, 40, 50, and 60 trading days prior to the bid. *Shared Auditor* is an indicator variable that equals one if the target and acquirer receive auditing services from the same audit firm prior to the bid announcement. *Shared Auditor Office* equals one if the target and acquirer receive audit services from the same office of an audit firm. *Same City* is an indicator equal to one if the target and acquirer are headquartered in the same city. *Shared Director* is an indicator equal to one if the target and acquirer share at least one director or are predicted to share a director. *Shared Advisor* is an indicator equal to one if the target and acquirer share a financial advisor. *Relative Size* is the ratio of the market value of target equity divided by the market value of acquirer equity. *Value of Transaction* is the deal value reported by SDC in billions. *Target Market-to-Book* is the market value of target assets divided by the book value of target assets. *Target ROA* is the target earnings (EBIT) divided by the book value of target assets. *Run-up (42 days)* is the market-adjusted change in the target's stock price from forty-two trading days before announcement to four days before announcement. *Toehold Indicator* equals one if the acquirer has an ownership stake in the target at the time of announcement, zero otherwise. *Same 2-digit SIC* equals one if the target and acquirer share the same two-digit SIC code, zero if they are not in the same two-digit industry. *Tender Offer* equals one if a bid is structured as a tender offer, zero if it is a merger. *Hostile* equals one if SDC classifies a bid as hostile, zero otherwise. *Target Termination Fee* is the logarithm of the dollar value of any target termination fee. The *of Bidders* is the number of bidders that have made public bids in an auction. *Cash Only Deal* equals one if a deal is paid entirely in cash, zero otherwise. Year and industry indicators based on two-digit SIC codes control for year and industry fixed effects.

Industry Bids, as [Palepu \(1986\)](#) indicates these variables predict the probability of receiving a bid, but there is little evidence that these variables impact deal outcomes.³⁰

³⁰ We note that leverage may impact some deal outcomes such as cash payment, which is not modeled here, and that deviations, but not necessarily levels, in leverage may impact announcement returns ([Harford et al., 2009](#)). For robustness, we include individually each excluded instrument in regressions of deal outcomes. In all cases, the coefficients on the shared auditor (shared auditor office) indicators and the inverse Mills ratios remain essentially unchanged.

Table 10 presents the results of the regressions of deal outcomes using the Heckman approach to correct for sample selection bias on all deals. In premium and target abnormal return regressions (Models 1–6), the inverse Mills ratio has a positive and significant relation with deal outcomes, revealing that a selection bias is present. Similarly, the inverse Mills ratio indicates selection bias with a negative and significant relation with the acquirer announcement returns. Completion rates show no significant evidence of a selection bias, as the correlation between the unobserved determinants of the propensity to receive a bid and the unobserved determinants of the bid completion rate in Models 10–12 is not statistically significant. The sign and significance of the coefficients on *Shared Auditor* and *Shared Auditor Office* for deal outcomes are consistent with results previously reported, with the exception of the analysis of target announcement returns and the loss of statistical significance (p -value=0.15, two-tailed) of the coefficient on *Shared Auditor* in Table 10, Model 4, and our analysis of acquirer announcement returns and the loss of statistical significance (p -value=0.13, two-tailed) of the coefficient on *Shared Auditor Office* in Table 10, Model 8. Overall, premiums and target returns are lower with shared auditors, and acquirer returns and completion rates are higher for shared-auditor acquisitions.³¹

Lastly, a concern still exists that firms choose auditors in anticipation of a deal and therefore our results could be driven by the endogeneity of auditor choice. Lennox and Pittman (2010) indicate that endogeneity in auditor choice is less of a concern when auditor tenure is longer. Therefore, to address the potential endogeneity in auditor and deal choice we redo our main analyses presented in Tables 5–8 in a sample of transactions in which both acquirer and target have had their auditors for at least three years prior to the transaction. In this case the selection of the auditor is unlikely to be made in anticipation of an M&A transaction. We note that our results on the relation between shared auditors and deal outcomes are unchanged in this robustness analysis.

7. Conclusion

We examine the impact of shared auditors on acquisition outcomes. We find that shared-auditor deals appear to favor acquirers, specifically when the target and acquirer receive audit services from the same auditor practice office and when the target is small. These results are consistent with auditors favoring acquirers by facilitating information about the target client, perhaps unintentionally through informal “water cooler” discussions within an auditor’s practice office. Prior studies focus on auditor independence breaches and their effect on the clients’ audit quality. This study documents a novel conflict of interest of an auditor that benefits one client at the expense of another. Our results therefore suggest the need for changes within auditor’s practice offices to safeguard confidential client information. At a minimum, client managers should consider the possible consequences of information leakage within an auditor’s practice office. We suggest that future research address other potential forms of violation of conflict of interest rules within service provider practice offices.

Lastly, while conflict of interest rules appear to have been violated, this study does not examine violations of conflict of interest rules in M&A and an auditor’s independence as it relates to subsequent truthful reporting on client financial statements. The important relation between shared auditor’s conflict of interests in M&A activity and subsequent audit quality could be an interesting venue for future research.

References

- Agrawal, A., Cooper, T., Lian, Q., Wang, Q., 2013. Common advisors in mergers and acquisitions: determinants and consequences. *Journal of Law and Economics* 56, 691–740.
- Ambrose, B.W., Megginson, W.L., 1992. The role of asset structure, ownership structure, and takeover defenses in determining acquisition likelihood. *Journal of Financial and Quantitative Analysis* 27, 575–589.
- Andrade, G., Mitchell, M., Stafford, E., 2001. New evidence and perspectives on mergers. *Journal of Economic Perspectives* 15, 103–120.
- Andrade, G., Stafford, E., 2004. Investigating the economic role of mergers. *Journal of Corporate Finance* 10, 1–36.
- Ashbaugh, H., LaFond, R., Mayhew, B.W., 2003. Do nonaudit services compromise auditor independence? Further evidence. *Accounting Review* 78 (3), 611–639.
- Asquith, P., Bruner, R., Mullins, D., 1983. The gains to bidding firms from merger. *Journal of Financial Economics* 11, 121–139.
- Bates, T.W., Lemmon, M.L., 2003. Breaking up is hard to do? An analysis of termination fee provisions and merger outcomes. *Journal of Financial Economics* 69, 469–504.
- Beatty, R.P., 1989. Auditor reputation and the pricing of initial public offerings. *Accounting Review* 64, 693–709.
- Beck, M., Mauldin, E.G., 2014. Who’s really in charge? Audit committee versus CFO power and audit fees. *Accounting Review* 89 (6), 2057–2085.
- Betton, S., Eckbo, B.E., Thorburn, K.S., 2009. Merger negotiations and the toehold puzzle. *Journal of Financial Economics* 91, 158–178.
- Betton, S., Eckbo, B.E., Thorburn, K.S., 2008. Corporate takeovers. In: Eckbo, B.E. (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*, vol. 2. North Holland Handbook of Finance Series, Elsevier, pp. 291–430 (Chapter 15).
- Bizjak, J., Lemmon, M., Whitby, R., 2009. Option backdating and board interlocks. *Review of Financial Studies* 22, 4822–4847.
- Bradley, M., Desai, A., Kim, E.H., 1988. Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics* 21, 3–40.
- Breeden, R.C., 2012. Statement of the Honorable Richard C. Breeden to the Public Company Accounting Oversight Board Regarding Auditor Independence and Audit Firm Rotation. Washington, D.C. (March 21, 2012).
- Bugeja, M., 2011. Takeover premiums and the perception of auditor independence and reputation. *British Accounting Review* 43, 278–293.

³¹ In unabridged analysis we limit the sample to Big-N-only deals and find results relatively consistent with those reported in Table 10 in that shared auditors result in deal outcomes that favor the acquirer at the expense of the target’s shareholders.

- Cai, Y., Kim, Y., Park, J.C., White, H.D., 2014. Common Auditors in M&A Transactions (Working Paper). Santa Clara University.
- Cai, Y., Sevilir, M., 2012. Board connections and M&A transactions. *Journal of Financial Economics* 103, 327–349.
- Choi, J., Kim, J., Qiu, A.A., Zang, Y., 2012. Geographic proximity between auditor and client: How does it impact audit quality? *Auditing: A Journal of Practice & Theory* 31, 43–72.
- Coval, J., Moskowitz, T., 2001. The geography of investment: informed trading and asset prices. *Journal of Political Economy* 109, 811–841.
- Craswell, A., Stokes, D.J., Laughton, J., 2002. Auditor independence and fee dependence. *Journal of Accounting and Economics* 33 (2), 253–275.
- De Franco, G., Gavigous, I., Jin, J.Y., Richardson, G.D., 2011. Do private company targets that hire Big 4 auditors receive higher proceeds? *Contemporary Accounting Research* 28, 215–262.
- DeAngelo, L.E., 1981. Auditor independence, 'low balling', and disclosure regulation. *Journal of Accounting and Economics* 3 (2), 113–127.
- DeFond, M., Zhang, J., 2014. A review of archival auditing research. *Journal of Accounting and Economics* 58 (2–3), 275–326.
- DeFond, M.L., Raghunandan, K., Subramanyam, K.R., 2002. Do non-audit service fees impair auditor independence? Evidence from going-concern opinions. *Journal of Accounting Research* 40 (4), 1247–1274.
- Dehejia, R., Wahba, S., 2002. Propensity score-matching for non-experimental causal studies. *Review of Economics and Statistics* 84, 151–161.
- Dhaliwal, D.S., Lamoreaux, P.T., Lennox, C.S., Mauler, L.M., 2015. Management influence on auditor selection and subsequent impairments of auditor independence during the post-SOX period. *Contemporary Accounting Research*. <http://dx.doi.org/10.1111/1911-3846.12079>, in press.
- Eckbo, B.E., Langohr, H., 1989. Information disclosure, method of payment, and takeover premiums: public and private tender offers in France. *Journal of Financial Economics* 24, 363–403.
- Francis, J.R., Yu, M.D., 2009. Big 4 office size and audit quality. *Accounting Review* 84, 1521–1552.
- Gaver, J.J., Paterson, J.S., 2007. The influence of large clients on office-level auditor oversight: evidence from the property-casualty insurance industry. *Journal of Accounting and Economics* 43, 299–320.
- Greene, W., 2012. *Econometric Analysis*, seventh edition Pearson Education, Inc., Upper Saddle River, NJ.
- Harford, J., Klasa, S., Walcott, N., 2009. Do firms have leverage targets? Evidence from acquisitions. *Journal of Financial Economics* 93, 1–14.
- Hay, D., Knechel, W.R., Wong, N., 2006. Audit fees: a meta-analysis of the effect of supply and demand attributes. *Contemporary Accounting Research* 23, 141–191.
- Heckman, J.J., 1979. Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society* 47, 153–161.
- Lambert, R., Leuz, C., Verrecchia, R.E., 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research* 45, 385–420.
- Lang, L.H.P., Stulz, R.M., Walkling, R.A., 1989. Managerial performance, Tobin's *Q*, and the gains from successful tender offers. *Journal of Financial Economics* 24, 137–154.
- Lennox, C.S., Pittman, J.A., 2010. Big five audits and accounting fraud. *Contemporary Accounting Research* 27, 209–247.
- Li, C., 2009. Does client importance affect auditor independence at the office level? Empirical evidence from going-concern opinions. *Contemporary Accounting Research* 26, 201–230.
- Louis, H., 2005. Acquirers' abnormal returns and the non-Big 4 auditor clientele effect. *Journal of Accounting and Economics* 40, 75–99.
- Malloy, C., 2005. The geography of equity analysis. *Journal of Finance* 60, 719–755.
- Myers, J., Myers, L., Omer, T., 2003. Exploring the term of the auditor–client relationship and the quality of earnings: a case for mandatory auditor rotation? *Accounting Review* 78, 779–799.
- Niemi, L., Ojala, H., Seppälä, T., Valuation of takeover targets and auditor quality (December 12, 2012) Available at SSRN: <http://ssrn.com/abstract=2313675>.
- Officer, M.S., 2003. Termination fees in mergers and acquisitions. *Journal of Financial Economics* 69, 431–467.
- Palepu, K.G., 1986. Predicting takeover targets: a methodological and empirical analysis. *Journal of Accounting and Economics* 8, 3–35.
- Puhani, P., 2000. The Heckman correction for sample selection and its critique. *Journal of Economic Surveys* 14, 53–68.
- Reichelt, K.J., Wang, D., 2010. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48, 647–686.
- Reynolds, J.K., Francis, J.R., 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30, 375–400.
- Rosenbaum, P., Rubin, D., 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika* 70, 41–55.
- Sartori, A., 2003. An estimator for some binary-outcome selection models without exclusion restriction. *Political Analysis* 11, 111–138.
- Schwert, G.W., 1996. Markup pricing in mergers and acquisitions. *Journal of Financial Economics* 41, 153–192.
- Schwert, G.W., 2002. Hostility in takeovers: in the eyes of the beholder? *Journal of Finance* 55, 2599–2640.
- Simunic, D., 1984. Auditing, consulting, and auditor independence. *Journal of Accounting Research* 22, 679–702.
- Skaife, H.A., Wangerin, D.D., 2013. Target financial reporting quality and M&A deals that go bust. *Contemporary Accounting Research* 30, 719–749.
- Stuart, T.E., Yim, S., 2010. Board interlocks and the propensity to be targeted in private equity transactions. *Journal of Financial Economics* 97, 174–189.
- Uysal, V.B., Kedia, S., Panchapagesan, V., 2008. Geography and acquirer returns. *Journal of Financial Intermediation* 17, 256–275.
- Wangerin, D., 2012. The Consequences of M&A Due Diligence for Post-Acquisition Performance and Financial Reporting (Working Paper). Michigan State University.
- Xie, Y., Yi, H., Zhang, Y., 2013. The value of big-N target auditors in corporate takeovers. *Auditing: A Journal of Practice & Theory* 32, 141–169.
- Ye, P., Carson, E., Simnett, R., 2011. Threats to auditor independence: the impact of relationship and economic bonds. *Auditing: A Journal of Practice & Theory* 30, 121–148.