



Audit partner independence and business affiliation: evidence from Taiwan

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ABSTRACT

Affiliated business groups play important roles in markets, especially emerging markets. Both International Auditing and Assurance Standards Board (IAASB) and Public Company Accounting Oversight Board (PCAOB) have expressed strong concerns about the audit quality of group financial statements. Audit quality is closely related with auditor independence (Tepalagul & Lin, 2015). In this study, we examine whether audit partners are more likely to compromise their independence for clients affiliated with consolidated business groups. We incorporate the impact of business group in the construction of client importance proxy in order to explore the potential impact of clientele's business group affiliation. Our findings support that there is no evidence on Big N audit partners compromising their independence for economically important clients no matter whether the clients are affiliated or not. However, we find that the previously documented relation between client importance and audit partner independence in non-Big N audit partners rests with business-group-affiliated and unlisted clients. Therefore, we conclude that non-Big N audit partners tend to compromise their independence for economically important clients who are within affiliated business groups and not listed in stock exchanges.

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1. Introduction

Independence of external auditors means their independence from parties that have an interest in the results published in financial statements of an entity. Auditor's independence is the foundation of the public's trust in the accounting profession and thus the cornerstone of the accounting profession. Regulators and investors have expressed strong concerns about auditor independence and taken actions to mitigate those concerns over the years. The passage of the 2002 Sarbanes-Oxley (SOX) Act prohibits the auditor from providing most non-audit services to its clients; imposes a 1-year cooling-off period for former auditors landing jobs at their clients, and requires audit partners to rotate every 5 years. To improve the transparency of the audit, the Public Company Accounting Oversight Board (PCAOB) requires audit firms to disclose the names of each audit engagement partner as well as the names of other audit firms that participated in each audit. The requirements are effective for audit reports issued in 2017.

Auditor independence has significant impact on audit quality. If auditors lost their independence, the audit quality would be impaired, thereby eroding the public's trust in the profession. Former Securities

and Exchange Commission (SEC) Commissioner Steven Wallman stated that there would be auditor independence concerns "where an office or partner was receiving a material percentage of revenues from a single client or group of clients." An auditor may have a higher incentive to yield to pressure from larger clients, thereby compromising independence. However, high reputation and litigation risk may counter this threat. An auditor may be subject to legal actions in case of audit failure, which could harm auditor reputation and potentially cause the auditor to lose fees from other clients (DeAngelo, 1981).

Prior research has studied the association of client importance and auditor independence at the firm or office level, but yielded mixed results. Chi, Douthett Jr., and Lisic (2012) uniquely examined the association at the audit partner level with data from Taiwan. They tested separately for listed and unlisted clients of Big N and non-Big N auditors. They found evidence that non-Big N audit partners compromise their independence for economically important clients, but they did not find such evidence for Big N auditors, no matter whether the clients are listed or not.

In this study, we refine the measure of client importance by incorporating the economic impact of business group affiliation into the construction of client importance proxy. We argue that the economic importance of a business-group-affiliated client to an audit partner is likely to be underestimated if we ignore the connection and the economic inter-dependence between the client and the affiliated business group.

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Using the modified measure and data from Taiwan, we examine whether the association between client importance and audit independence varies across business-group-affiliated and nonaffiliated clients, Big N and non-Big N clients, and listed and unlisted clients. Business groups have an inter-dependent nature and use reinvestment, cross-shareholding, and related-party transactions among subsidiaries to increase their effective span of control. Therefore, *ceteris paribus*, an affiliated client is likely more economically important to an auditor than a nonaffiliated client. We measure the economic impact of business group using the total sales reported in the consolidated financial statements. We expect that audit partners are more likely to compromise their independence for affiliated clients than nonaffiliated clients.

To control for the measurement error in auditor independence proxies, we employ multiple proxies for auditor independence, including various abnormal accruals measures, and the propensity of audit partners to issue modified audit opinions. Our findings show no evidence that client importance is significantly related with auditor independence for Big N clients, which supports [Chi et al. \(2012\)](#) that there is no evidence on Big N audit partners compromising their independence for economically important clients no matter whether the clients are affiliated or nonaffiliated, listed or unlisted.

However, we find that client importance is negatively and significantly associated with auditor independence for business-group-affiliated and unlisted clients of non-Big N auditors. That is, the relation between client importance and audit partner independence for non-Big N audit partners documented in [Chi et al. \(2012\)](#) rests with clients that are unlisted and affiliated with business groups. Such clients tend to be more economically significant to auditors because of their affiliation with the groups. Further, the auditors of such clients are less exposed to reputation loss and litigation risk because of their not being listed in stock exchanges. Our findings are robust to alternative measures of auditor independence. Therefore, we conclude that non-Big N audit partners tend to compromise their independence for economically important clients who are not listed in stock exchanges but affiliated with business groups, while we do not find such evidence for listed or nonaffiliated clients of non-Big N auditors.

Our contribution is threefold. First, our findings refine the conclusions of previous research that non-Big N audit partners compromise their independence for economically important clients. In particular, we point out how the [Chi et al. \(2012\)](#) results appear to be due to non-Big N partners compromising to affiliated and unlisted clients, rather than compromising on any client regardless of their affiliation with the group or the client being listed. Second, Both IAASB and PCAOB have expressed strong concerns regarding the audit quality of group financial statements. Our findings that non-Big N auditors compromise their independence for business-group-affiliated and unlisted clients of economic importance provide implications for regulations on auditor independence as well as affiliated business groups. Third, including the factor of business group affiliation in the measurement of client importance can potentially reduce the measurement error in the proxies of client importance and thus help us better explore the impact of clientele's economic importance on auditor independence and audit quality. Using of Taiwan data limits our inferences to the Taiwanese capital market, however, our study may be of interest to professionals and regulators in other developed capital markets.

The remainder of the paper is organized as follows. Section 2 discusses relevant literature and develops the hypothesis. Section 3 describes our research design, sample selection, and data sources. Then we summarize the empirical results and findings in Section 4. Section 5 presents our conclusions.

2. Literature review and hypothesis development

2.1. Literature on client importance and auditor independence

After [DeAngelo \(1981\)](#) theoretically suggested the negative impact of client importance on auditor independence, prior literature has performed studies on the association of client importance and auditor independence at the firm, office, and the partner level. Most studies used such as audit opinions and abnormal accrual measures as proxies of auditor independence. However, the empirical evidence has been mixed ([Tepalagul & Lin, 2015](#)).

At the firm level, prior studies ([Chung & Kallapur, 2003](#); [Hope & Langli, 2010](#) and [Hunt & Lulseged, 2007](#)) did not find evidence that auditors compromise their independence to economically important clients. [Hope and Langli \(2010\)](#) reported no evidence even in a low litigation and reputation risk setting. Moreover, [Hunt and Lulseged \(2007\)](#) suggested that non-Big N auditors treat their larger clients more strictly. [Zhou and Zhu \(2012\)](#) reported that auditors are less likely to compromise their independence for important clients after the Asian financial crisis by investigating the six Asian markets (Hong Kong, Indonesia, Malaysia, Singapore, Taiwan and Thailand) in 1994–2001.

Prior studies ([Chen, Sun, & Wu, 2010](#); [Hunt & Lulseged, 2007](#); [Li, 2009](#) and [Reynolds & Francis, 2000](#)) further examined the association of client importance and auditor independence at the office level, but found no statistically significant evidence. Further, [Reynolds and Francis \(2000\)](#) documented that Big N auditors reported more conservatively for larger clients. [Li \(2009\)](#) found that economically important clients are more likely to receive a going-concern report in the 2003 post SOX period. [Chen et al. \(2010\)](#) examined the association between audit quality and client importance at both the office level and the partner level, before and after a series of institutional improvements in Chinese capital market. Their results suggest that the impact of client importance on audit decisions appears to be different at the individual auditor and office levels.

[Chi et al. \(2012\)](#) is the first study examining the association of client importance and auditor independence at the engagement partner level. They documented evidence that non-Big N audit partners compromise their independence for economically important clients although they failed to find evidence for Big N auditors in a Taiwanese setting. [Hossain, Monroe, Wilson, and Jubb \(2016\)](#) incorporated the networks of clients that result from audit committee member-audit partner interlocks into the examination of audit quality and client importance at the partner level, using data during 2003–2011 from Australia. They documented evidence that audit partner dependence on fees from other companies in the network reduce audit quality.

2.2. Literature on affiliated business groups and group audit

Extant literature defined affiliated business groups as a legal group of mutually exclusive companies, bound to each other through formal or informal ties, and accustomed to taking coordinated actions ([Johl, Khan, Subramaniam, & Muttakin, 2016](#); [Khanna & Rivkin, 2001](#) and [Khanna & Yafeh, 2007](#)). These companies are bound together by equity or organizational relationships to achieve overall improvements in group performance. In this study, we focus on affiliated business group publishing consolidated financial statements.

In affiliated business groups, management and supervision are in general retained by the same parent, the individual subsidiary company's internal governance body is prevented from performing oversight as expected ([Fan & Wong, 2002, 2005](#)). Further, as companies in these groups usually use pyramid and cross-shareholding structures to integrate ownership and to help attain their desired level of control ([Claessens, Djankov, Fan, & Lang, 2002](#)), these groups often have considerable re-investment, cross-shareholding or related-party transactions compared to those nonaffiliated businesses. This practice has caused

severe information asymmetry between companies and investors within the group, has led to agency problems, and triggered potential manipulation of earnings by management (Jian & Wong, 2003; Kim & Yi, 2006).

Consolidated business groups issue group financial statements. The audit of group financial statements is called group audit. Both IAASB and PCAOB have expressed strong concerns regarding the audit quality of multinational groups, especially those group audits involving the coordination of the principal auditor and other auditors. The additional risks of group audit include (1) risks related to managing complex, diverse, or decentralized business operations (Johl et al., 2016; Stewart & Kinney, 2013); and (2) risks related to coordinating with component auditors (Carson, Simnett, Trompeter, & Vanstraelen, 2014a, 2014b; Downey & Bedard, 2016). Johl et al. (2016) suggested that business complexity and risks significantly vary between group-affiliated and standalone companies. Their findings indicate that the costs of company governance mechanisms are significantly higher for affiliated than for unaffiliated companies. Carson et al. (2014a) reported lower audit quality for group audits involving the principal auditor's network compared to other arrangements, suggesting potential over reliance on the work of network members.

The regulation of company ownership and operation rights in affiliated business groups is more complicated than it is in other unaffiliated companies. Subsidiaries of an affiliated business group normally have many re-investment options, making it difficult to gain a comprehensive understanding of the transactions among subsidiaries if they are not all audited by the same firm. The Enron collapse in 2001, the most infamous accounting scandal in corporate history, arose from mismanagement and the prolific use of regulated special purpose entities (SPE) as re-investment companies. Prior to the failure, U.S. laws stipulated that under certain conditions assets and debts of SPEs were allowed to be exempt from consolidation in the financial statements of the parent company or related business, despite the massive accumulated debt. Following the scandal, in 2002 the U.S. Congress passed the Sarbanes-Oxley Act (SOX), requiring affiliated business group members to use assurance services from the same audit firm on their financial statements. Similar regulations apply to corporations in Japan as well. Parmalat in Italy experienced a financial scandal in 2003, where half of the company's financial statements were audited by Deloitte Touche Tohmatsu (DTT) while the other half was audited by different audit firms. This procedure was viewed as a financial manipulation, as it was contrary to the SOX regulation in the U.S.

Group audit is performed on an entity with multiple locations or components, such as subsidiaries, with separately audited financial information that gets included in consolidated or group financial statements. To properly plan the nature and extent of audit procedures for a group audit, a group engagement partner (the lead auditor for the consolidated entity) must determine group overall materiality and establish or approve appropriate materiality levels for the individual components (Glover, Prawitt, Liljegren, & Messier Jr, 2008; Stewart & Kinney, 2013). The component materiality level helps guide the individual component auditors in planning and performing audit procedures to achieve the acceptable level of audit risk, so the group auditor achieves the acceptable level of group overall audit risk on the consolidated financial statements. U.S. auditing standards (AU section 312 and PCAOB's Auditing Standard No. 5, paragraphs B10–B16 of Appendix B) provide a list of factors to consider in determining the extent of testing in such a multi-component audit. However, these standards do not provide specific practical guidance on establishing component level planning materiality, one of the primary factors used to determine the extent of testing. IAASB recently released a revised and redrafted International Standard on Auditing (ISA) 600, Special Considerations—Audits of Group Financial Statements (Including the Work of Component Auditors), to provide additional guidance to group engagement partners. Paragraphs 21–23 and A42–A46 of ISA600 provide guidance to help

inform group engagement partner materiality decisions. Paragraph A43 provides guidelines regarding component materiality.

2.3. Taiwan's institutional background

Taiwan is an emerging market comprising mainly small- and medium-sized enterprises. Affiliated business groups have an important place in Taiwan's capital market. Between 1973 and 1992, the total operating revenues of consolidated groups accounted for approximately 32.7% of Taiwan's GNP (China Credit Information Service, Ltd, 2004). In 2004, the operating revenue of these groups reached 85.8% of Taiwan's GNP, demonstrating their increasing influence on the capital market and their relative and mounting importance as a source of governmental revenue. Chang, Fang, and Shen (2008) reported that 58.75% of the group financial statements (also called consolidated financial statements) are audited by different firms.

The Securities and Futures Bureau in Taiwan (comparable to SEC in USA) currently allows different audit firms to audit the financial statements of subsidiaries within an affiliated business group, which is different from ISA600 in some regards. As a consequence, subsidiaries within the same group frequently engage different audit firms, thus preventing any single audit partner from gaining too much knowledge of the affiliated business group. The audit firm for the parent company is allowed to use the audit information provided by the other audit firms during the engagement period, and must simply disclose the source of the audit information for the subsidiaries in the footnotes to the financial statements of the parent company. Since affiliated business groups engage in extensive related-party transactions, the audit partner of the parent company thus shares responsibilities and risks with the other audit firms. From the perspective of financial statement users, this may cause confusion and reduced transparency with regard to the extent of audit responsibilities. It may also cause greater overall audit risk, since it is essential for auditors to understand both sides of related-party transactions to gain a sufficient understanding of the economic consequences for the affiliated group as a whole.

2.4. Hypothesis development

In this study, we examine whether the association between client importance and audit independence varies across business-group-affiliated clients and nonaffiliated clients, using data from Taiwan. First, affiliated business groups have a position of prominence in developing countries and hold considerable power among publicly traded companies in emerging capital markets including the Taiwan market. Business groups have an inter-dependent nature and use reinvestment, cross-shareholding, and related-party transactions among subsidiaries to increase their effective span of control. Therefore, *ceteris paribus*, an affiliated client is likely more economically important to an auditor than a nonaffiliated client. It is possible that audit partners may compromise their independence for clients affiliated with business groups due to concerns about possible loss of client business from other subsidiaries within the same group if a client is dissatisfied with the services provided by the auditor.

Second, prior studies (Jian & Wong, 2003; Kim & Yi, 2006) reported that the cross-shareholding structure, the reinvestment, and related-party transaction practices of affiliated business groups have produced severe information asymmetry and triggered potential manipulation of earnings by management within the groups. Bukit and Iskandar (2009) and Gerayli, Yanesari, and Ma'atooft (2011) reported that clientele' higher likelihood of earnings manipulation is associated with lower level of auditor independence, which supports the possibility that auditors do not remain of the same level of auditor independence with clients affiliated with business groups as they do with nonaffiliated clients.

Third, according to Taiwan regulations, the subsidiaries within a same business group are allowed to hire different audit firms. Since

auditors are only required to indicate their area of responsibility in a footnote to the financial statements, it is likely that the divided responsibility and risk will reduce the accountability of auditors and lead to a compromise in auditor independence.

In sum, we expect that audit partners may be more likely to compromise their independence for economically important clients within affiliated business groups compared to nonaffiliated clients. Therefore, our hypothesis is stated in its null form as follows:

H1. Client importance of affiliated business group is not associated with audit partner independence.

3. Research design and sample selection

3.1. Measurement of client importance

Prior literature (Craswell, Francis, & Taylor, 1995; Francis, 1984) has demonstrated that audit fees are highly correlated with the natural logarithm of clients' sales. Given the unavailability of the audit fee data in Taiwan, we measure client importance (DEP) as the natural logarithm of a client's sales divided by the sum of the natural logarithm of client sales from all clients of the audit partner, following the methodology in Reynolds and Francis (2000) and Chi et al. (2012).

Hossain et al. (2016) suggests that a client's economic importance is determined not only by the fee paid by the client itself but also by the fees paid by the other companies in the same network. Dana (2012) indicates that buyer groups with heterogeneous needs can increase bargaining power among rival sellers by making strategic commitments. A measure of clients' economic importance can be biased if we isolated the client from its network and affiliation. That is, we may underestimate the economic importance of a client if we separate the client from the business group it is affiliated with, considering the inter-dependent nature of the affiliated companies. Therefore, if a client is affiliated with a business group, we use the total sales in the consolidated financial statements reported by the client's affiliated business group to replace the client's sales.

Taiwan regulations require each audit report be signed by the two signing auditors as well as by an audit firm. Following Chi et al. (2012), we adopt the larger client importance measure between the two signing audit partners as the client importance at the audit partner level. Moreover, when calculating the sum of the natural logarithm of client sales from all clients of an audit partner, we include all the listed and unlisted clients for the audit partners before exercising any data requirements. Appendix provides an example illustrating the calculation of DEP.

3.2. Measurement of auditor independence

Prior studies have used different measures of earnings quality as proxies for auditor independence. These include: absolute and signed abnormal accruals, the probability that clients meet or just beat zero earnings and the previous year's earnings benchmarks, and auditors' propensity to issue modified opinions (Chen et al., 2010; Chen, Lin, & Lin, 2008; Chi et al., 2012). Chen et al. (2008) estimated cross-sectional modified Jones model discretionary accruals, adjusted for prior year performance, following Kothari, Leone, and Wasley (2005) (i.e., ROA_{it} was added as an additional independent variable in the modified Jones model to obtain the residuals as discretionary accruals). Considering the possible effects of company performance on the association between the two variables of primary interest (client importance of affiliated business groups and independence of audit partners), we follow Chen et al. (2008) and use both absolute and signed abnormal accruals as proxies for auditor independence in our primary regression models

to test our hypothesis.

$$TAC_{it} = \beta_1 \left(\frac{1}{ASSETS_{it-1}} \right) + \beta_2 \Delta REV_{it} + \beta_3 PPE_{it} + \beta_4 ROA_{it-1} + \varepsilon_{it} \quad (1)$$

The variables included in the above equations are defined below:
 TAC_{it} = Total accruals (earnings before extraordinary items minus net cash flow from operations);

$ASSETS_{it-1}$ = Total initial assets;

ΔREV_{it} = Change in current period sales divided by total initial assets;

PPE_{it} = Gross worth of property, plant and equipment divided by total initial assets;

ROA_{it-1} = The lagged return on total assets.

We separately introduce year-by-year industry sample data into Eq. (1). We use the regression residuals (DA) and absolute value of DA (ABS_DA) as proxy for auditor independence for the entire sample. We then partition the observations into two subsamples based on positive (DA+) and negative (DA-) abnormal accruals, and use the signed value to measure auditor independence for each subsample.

3.3. Research model

To investigate the effects of client importance on auditor independence in clients of different types, we use the proxies of auditor independence (DA, ABS_DA, DA+, and DA-) as the dependent variable, following Chi et al. (2012). Our major explanatory variable is the client importance proxy (DEP). We omit company and time subscripts to simplify exposition. The research model we employed is as follows:

$$DA = \alpha_0 + \alpha_1 DEP^{UNAFF\&LIST\&BIGN} + \alpha_2 DEP^{AFF\&LIST\&BIGN} + \alpha_3 DEP^{UNAFF\&UNLIST\&BIGN} + \alpha_4 DEP^{AFF\&UNLIST\&BIGN} + \alpha_5 DEP^{UNAFF\&LIST\&NOBIGN} + \alpha_6 DEP^{AFF\&LIST\&NOBIGN} + \alpha_7 DEP^{UNAFF\&UNLIST\&NOBIGN} + \alpha_8 DEP^{AFF\&UNLIST\&NOBIGN} + \theta \sum Control_Variables + INDUSTRY_DUMMY + YEAR_DUMMY + \eta \quad (2)$$

where: DA = Modified-Jones model abnormal accruals adjusted for prior year performance, alternatively measured in DA, absolute (ABS_DA), positive and negative values (DA+ and DA-). DEP = Client importance at the audit partner level, measured as the larger client importance measure between the two signing audit partners. The client importance for each partner is measured as the natural logarithm of client sales divided by the sum of the natural logarithm of client sales from all listed and unlisted clients of the audit partner. If a client is affiliated with a business group, the client's sales is replaced with the total sales reported in the consolidated financial statement issued by the affiliated business group. $DEP^{UNAFF\&LIST\&BIGN}$ = DEP if the client is a listed company audited by Big N audit partners but not affiliated with any business group, and 0 otherwise. $DEP^{AFF\&LIST\&BIGN}$ = DEP if the client is a listed company audited by Big N audit partners and affiliated with any business group, and 0 otherwise. $DEP^{UNAFF\&UNLIST\&BIGN}$ = DEP if the client is an unlisted company audited by Big N audit partners but not affiliated with any business group, and 0 otherwise. $DEP^{AFF\&UNLIST\&BIGN}$ = DEP if the client is an unlisted company audited by Big N audit partners and affiliated with any business group, and 0 otherwise. $DEP^{UNAFF\&LIST\&NOBIGN}$ = DEP if the client is a listed company audited by non-Big N audit partners but not affiliated with any business group, and 0 otherwise. $DEP^{AFF\&LIST\&NOBIGN}$ = DEP if the client is a listed company audited by non-Big N audit partners and affiliated with any business group, and 0 otherwise. $DEP^{UNAFF\&UNLIST\&NOBIGN}$ = DEP if the client is an unlisted company audited by non-Big N audit partners but not affiliated with any business group, and 0 otherwise. $DEP^{AFF\&UNLIST\&NOBIGN}$ = DEP if the client is an unlisted company audited by non-Big N audit partners and affiliated with any business group, and 0 otherwise.

Control Variables include:

SIZE = Natural logarithm of total assets at the end of the year;

GROWTH = Growth rate of net sales over the previous year;
CFO_SD = Standard deviation of asset-scaled cash flow from operations over the past four years;

TENURE = Tenure of the audit partner with the relatively longer tenure, where each partner's tenure is the number of consecutive years the company has retained the audit-partner;

AGE = Number of years since the client was incorporated;

LEV = leverage ratio, total liability divided by total equity;

LOSS = 1 if the client reported loss in previous year and 0 otherwise;

CPA_BUSY = signing auditor's number of clients;

BIGN = 1 if the client is audited by a big N firm and 0 otherwise;

LISTED = 1 if the client is listed and 0 otherwise;

AFFILIATED = 1 if the client is affiliated with business group and 0 otherwise;

Prior studies have demonstrated that company size, company growth rate, cash-flow volatility, the incidence of financial losses, leverage ratio, and audit partner busyness all affect reported discretionary accruals (Carey & Simnett, 2006; Chen et al., 2008; Chi et al., 2012; Chi & Huang, 2005 and Hribar & Nichols, 2007). We therefore include these variables in our regression model of the effects of client importance of affiliated business groups on auditor independence. We expect the coefficients on *SIZE*, *GROWTH*, and *CFO_SD* to be positive. We predict the coefficients on *LEV*, and *LOSS* to be negative. We cannot predict a direction for *AGE*, *TENURE* and *CPA_BUSY* due to mixed results from prior studies.

To reduce the influence of outlier observations, all continuous variables are winsorized at their 1st and 99th percentile levels. A significant positive coefficient of *DEP* (α_k , $k = 1$ to 8) for the *DA*, *ABS_DA* and *DA+* regression would suggest that auditors compromise their independence to clients of certain type and the clients manage earnings upward, which would support our H1. However, a significant positive coefficient of *DEP* for the *ABS_DA* regression combined with a significant negative (positive) coefficient of *DEP* for the *DA-* regression would imply downward (more moderate downward) earnings management in the clients of certain type. As management have different motivations in downward earnings management than in upward earnings management, a significant coefficient (regardless of the sign) of *DEP* for the *DA-* regression does not make a solid evidence of auditors compromising their independence to the clients. According to H1, *ceteris paribus*, we expect that auditors are more likely to compromise their independence to clients affiliated with business groups than nonaffiliated clients. That is, we expect positive coefficients on $DEP^{AFF&LIST&BIGN}$, $DEP^{AFF&LIST&NOBIGN}$, $DEP^{AFF&UNLIST&BIGN}$, and $DEP^{AFF&UNLIST&NOBIGN}$.

Furthermore, we use Taiwan data to test our hypothesis separately for Big N and non-Big N audit partners. Big N auditors may be less likely to compromise their independence to economically important clients affiliated with business groups, compared with non-Big N auditors for two reasons.

First, DeAngelo (1981) has noted a negative correlation between audit quality and the proportion of audit fees from a single client to the firm's total audit fees (the client fee ratio). Our descriptive statistics in Table 2 show that about 83.4% of listed and unlisted companies in Taiwan have their annual reports audited by Big N firms. When an audit firm has more clients, it is less concerned about possible economic loss from upholding financial reporting and auditing standards in the face of strenuous client objection. Therefore, Big N audit firms generally have a lower total audit fee ratio for any single client and tend to maintain a higher level of independence and better audit quality. On the other side, it is likely that non-Big N audit partners will compromise their independence for economically important clients who are affiliated with business groups, relative to economically important but non-affiliated clients, due to their consideration of the inter-dependent nature of the subsidiaries, the auditors' aggregated economic reliance on the group, the audit risk-dilution allowed under Taiwanese regulation for affiliated groups, and competitive pressures from other audit firms serving the same affiliated group.

Second, since Big N audit firms are subject to higher litigation risk and reputation cost, they tend to adopt a more conservative approach when performing the audit (*i.e.*, maintaining independence and providing better audit quality), compared with non-Big N audit firms (Beatty, 1989). Moreover, Big N auditors have better trained employees and technology to detect financial statement irregularities (Hunt & Lulseged, 2007).

Therefore, we expect that it is more likely to find evidence of independence impairment and thus positive coefficients on *DEP* in the context of affiliated business groups for non-Big N than Big N audit partners, if any.

We also test our hypothesis separately for clients listed in stock exchanges and clients not listed in stock exchanges. Auditors of unlisted companies have lower risk of reputation loss and lower risk of litigation, compared to auditors of listed companies (Hope & Langli, 2010). Therefore, we expect that it is more likely to find evidence of independence impairment and thus positive coefficients on *DEP* in the context of affiliated business groups for unlisted clients than listed clients, if any.

3.4. Sample selection and data sources

Our sample selection process began with all of the publicly listed nonfinancial companies included in the Taiwan Economic Journal (TEJ) database from 2000 to 2015. In addition to the companies listed on the Taiwan Stock Exchange Corporation (TWSE) and GrTai Securities Market (GTSM), unlisted companies are also required by the Taiwan Securities and Exchange Act to publicly disclose their audited financial statements. As these companies are less likely to impose reputation risks on auditors (Hope & Langli, 2010), we include both listed and unlisted clients in our sample, to construct a more complete client portfolio for each audit partner.

Table 1, Panel A presents our data sources and sample selection, Panel B presents the industry distribution of our sample. The size of the sample increases yearly from 2000 to 2015. The final sample contains 18,726 observations,¹ with the Electronics industry being the highest proportion (52.11%), followed by the Chemicals industry.

4. Empirical results

4.1. Descriptive statistics

Table 2 presents the mean, median, standard deviation, 25th and 75th percentile values of each variable. Panel A presents the descriptive statistics for the whole sample. Panel B presents the descriptive statistics for subsamples of affiliated and nonaffiliated businesses. Panel C presents the descriptive statistics for subsamples of Big-N-audited and non-Big-N-audited companies. Panel D presents the descriptive statistics for subsamples of listed and unlisted companies.

As presented in Table 2 Panel A, the mean value of *DEP* is 0.212, indicating that the average level of client importance for an audit partner is 21.2% (giving the client portfolio of an audit partner is 100%). This value is much higher than the 13.9% reported in Chi et al. (2012); since this study incorporates affiliated business groups in computing the value of client importance, the above statistic implies the significance of considering affiliated business groups in measuring client importance. Our sample companies have an average discretionary accruals (*DA*) of -0.019 with median -0.019 and standard deviation 0.098. The mean and median of absolute value of discretionary accruals (*ABS_DA*) are 0.072 and 0.052, which are comparable to the mean/median (0.084/0.056) reported in Chi et al. (2012). Our sample companies,

¹ During our study period (2000–2015), the average number of companies in each affiliated business group in every year is as follows: 2.47 in 2000; 2.71 in 2001; 3.12 in 2002; 3.32 in 2003; 3.58 in 2004; 3.31 in 2005; 2.47 in 2006; 2.49 in 2007; 2.49 in 2008; 2.64 in 2009; 2.71 in 2010; 2.64 in 2011; 2.60 in 2012; 2.56 in 2013; 2.59 in 2014; and 2.95 in 2015.

Table 1
Sample selection and distribution (2000–2015).

Panel A: Sample selection																		
Less:	All client-years during 2000–2015 on Taiwan Economic Journal (TEJ) Corporate governance database																	38,539
	Client-years of financial institutions																	5832
	Client-years with missing data for computing DA																	12,050
	Client-years with missing data for control variables																	1931
Final Sample																		18,726
Panel B: Industry distribution																		
Industry/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	%
Foods	24	24	25	25	25	25	25	25	25	25	25	25	25	25	25	25	398	2.13%
Plastics	24	25	26	26	26	26	26	26	26	26	26	26	26	26	26	26	413	2.21%
Textiles	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	780	4.17%
Electric & machinery	49	54	55	57	60	61	63	63	64	65	65	65	65	66	66	68	986	5.27%
Elec. Appl. & cable	15	16	16	15	16	16	17	17	17	16	16	18	19	18	18	18	268	1.43%
Chemicals	50	58	64	68	72	77	81	82	84	85	90	91	91	90	93	93	1269	6.77%
Steel & iron	33	35	38	38	38	38	38	38	38	39	39	39	39	38	39	40	607	3.24%
Rubber	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11	171	0.91%
Automobile	11	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13	201	1.07%
Electronics	268	357	450	509	555	593	616	635	662	687	706	727	746	745	751	751	9758	52.11%
Construction	46	49	51	53	54	53	53	55	54	56	56	57	58	54	57	57	863	4.61%
Transportation	22	21	22	21	21	21	21	22	23	23	23	23	23	23	23	23	355	1.90%
Tourism	8	8	10	10	11	11	11	11	11	12	13	13	14	14	14	14	185	0.99%
Wholesale & retail	14	16	16	16	17	17	17	17	17	17	17	17	17	17	17	17	266	1.42%
Gasoline & Elec.	10	10	11	11	11	11	12	12	12	12	12	12	12	12	12	12	184	0.97%
Others	62	79	100	115	129	132	133	134	135	139	143	145	146	142	144	144	2022	10.80%
Total	694	822	954	1034	1106	1153	1186	1210	1241	1275	1304	1331	1354	1343	1358	1361	18,726	100.00%
%	3.71%	4.39%	5.09%	5.52%	5.91%	6.16%	6.33%	6.46%	6.63%	6.81%	6.96%	7.11%	7.23%	7.17%	7.25%	7.27%	100.00%	

on average, have 9.3% growth in net sales from the previous year (GROWTH) and 0.062 standard deviation in cash flows from operations over the past four years (CFO_SD). The sample companies have retained the audit partner for an average of 6.854 years (TENURE) and have stayed in the market for an average of 25.826 years since incorporation (AGE). The sample clients have a mean leverage rate of 0.385. The companies' auditors, on average, have 6.571 clients. Of the total sample, 21.5% have net loss in previous year, 87.0% are listed companies, 83.45% are audited by Big N firms, and 45.49% are affiliated with business groups.

Table 2 Panel B presents mean values $-0.021(0.067)$ of DA (ABS_DA) for the affiliated clients and $-0.016(0.077)$ for the nonaffiliated clients, respectively. While the value for the nonaffiliated clients is significantly higher, we are not able to determine whether the audit partners exercise a lower level of independence solely from the results of these univariate tests without controls for other variables. The mean value of DEP is 0.325 for the affiliated clients and only 0.118 for the nonaffiliated clients, highlighting the influence of client importance of affiliated business groups on audit partners. The affiliated clients are significantly more mature than the nonaffiliated clients (AGE). In addition, compared to nonaffiliated clients, affiliated clients have larger size (SIZE), lower cash flow volatility (CFO_SD), longer auditor tenure (TENURE), higher leverage rate (LEV), lower percentage of financial loss (LOSS), a higher percentage of companies listed (LISTED), and a higher percentage of companies audited by Big N firms (BIGN).

Table 2 Panel C presents mean values $-0.021(0.072)$ of DA (ABS_DA) for the Big N clients and $-0.009(0.073)$ for the non-Big N clients, respectively. DA of Big N clients is significantly lower than DA of non-Big N clients. The mean value of DEP is 0.169 for the Big N clients and 0.428 for the non-Big N clients. The means are significantly different, highlighting the higher influence of client importance on non-Big N audit partners than on Big N audit partners. Big N clients are significantly younger than non-Big N clients (AGE). In addition, compared to non-Big N clients, Big N clients have larger size (SIZE), lower sales growth (GROWTH) and cash flow volatility (CFO_SD), shorter auditor tenure (TENURE), lower leverage rate (LEV), lower percentage of financial loss (LOSS), busier auditors (CPA_BUSY), a higher percentage of companies listed (LISTED), and a higher percentage of companies affiliated with business groups (AFFILIATED).

Table 2 Panel D presents mean values $-0.017(0.073)$ of DA (ABS_DA) for the listed clients and $-0.030(0.068)$ for the unlisted clients, respectively. The means for the listed clients are higher, which is inconsistent with our expectation that listed clients have better audit quality due to higher reputation risks. However, we are not able to reach a conclusion from the results of these univariate tests and without any control for other variables. The mean value of DEP is only 0.210 for the listed clients but 0.223 for the unlisted clients, highlighting the potential influence of economically important and unlisted clients on audit partners. Listed clients are more mature than unlisted clients (AGE). In addition, compared to unlisted clients, listed clients have a larger size (SIZE), shorter tenure, lower leverage rate, less busy auditors, a higher percentage of companies audited by Big N auditors, and a higher percentage of companies affiliated with business groups.

Table 3 presents the composition of the full sample in terms of client-years and distinct clients. Of the 18,726 client-year observations, 83.45% (15,626 client-years) are of companies audited by Big N auditors; 45.49% (8518 client-years) are of companies affiliated with business groups, which demonstrates the important position of business groups in Taiwan's capital market. Moreover, about 5.83% (including 1091 client-year and 157 distinct clients) of the full sample are of the business-group-affiliated companies audited by non-Big N auditors. We expect those business-group-affiliated clients are more economically important to their auditors because of their connection with business groups. The percentage of the clients audited by non-Big N clients is only about 16.55%, including both the affiliated clients 5.83% (12.81% from Table 3-panel A \times 45.49% from Table 2-panel A = 5.83%) and nonaffiliated clients 10.72% (19.68% from Table 3-panel A \times 54.51% = 10.72%). These descriptive statistics confirm the need to separately study the clients (especially in affiliated business groups) for Big N and non-Big N auditors.

4.2. Pearson correlations

We calculate first-order Pearson correlation coefficients for all of our variables, presented in Table 4. In Panel A, the coefficient between the absolute value of discretionary accruals (ABS_DA) and client importance (DEP) is -0.018 and significant at 1%. The coefficient between

Table 2
Descriptive statistics

Panel A: Total observations (N = 18,726)						
	Mean	S.D.	Q1	Median	Q3	
ABS_DA	0.072	0.069	0.023	0.052	0.097	
DA	-0.019	0.098	-0.071	-0.019	0.028	
DEP	0.212	0.268	0.023	0.091	0.301	
SIZE	21.957	1.349	21.001	21.785	22.697	
GROWTH	0.093	0.485	-0.097	0.031	0.176	
CFO_SD	0.062	0.063	0.028	0.047	0.077	
TENURE	6.854	4.074	4.000	6.000	9.000	
AGE	25.826	12.231	16.000	24.000	34.000	
LEV	0.385	0.178	0.251	0.371	0.498	
LOSS	0.215	0.411	0.000	0.000	0.000	
CPA_BUSY	6.571	3.850	4.000	6.000	9.000	
BIGN	0.834	0.372	1.000	1.000	1.000	
LISTED	0.870	0.336	1.000	1.000	1.000	
AFFILIATED	0.455	0.498	0.000	0.000	1.000	

Panel B: affiliated business group observations (n = 8,518) vs. nonaffiliated business observations (n = 10,208)						
Variable	Mean	Q1	Median	Q3	S.D.	t
ABS_DA						
Affiliated	0.067	0.021	0.048	0.092	0.063	9.788***
Nonaffiliated	0.077	0.025	0.055	0.103	0.073	
DA						
Affiliated	-0.021	-0.070	-0.019	0.023	0.090	3.451***
Nonaffiliated	-0.016	-0.072	-0.020	0.032	0.105	
DEP						
Affiliated	0.325	0.111	0.246	0.479	0.274	-56.892***
Nonaffiliated	0.118	0.011	0.030	0.095	0.224	
SIZE						
Affiliated	22.850	22.077	22.677	23.507	1.231	-100.000***
Nonaffiliated	21.211	20.632	21.193	21.691	0.924	
GROWTH						
Affiliated	0.087	-0.089	0.031	0.170	0.435	1.385
Nonaffiliated	0.097	-0.105	0.031	0.183	0.523	
CFO_SD						
Affiliated	0.054	0.025	0.042	0.068	0.048	15.088***
Nonaffiliated	0.068	0.031	0.051	0.084	0.073	
TENURE						
Affiliated	7.399	4.000	7.000	10.000	4.298	-16.824***
Nonaffiliated	6.400	3.000	6.000	9.000	3.818	
AGE						
Affiliated	28.318	18.000	27.000	38.000	12.954	-25.921***
Nonaffiliated	23.746	15.000	22.000	31.000	11.177	
LEV						
Affiliated	0.393	0.273	0.386	0.499	0.167	-5.536***
Nonaffiliated	0.378	0.236	0.356	0.497	0.186	
LOSS						
Affiliated	0.174	0.000	0.000	0.000	0.379	12.776***
Nonaffiliated	0.250	0.000	0.000	1.000	0.433	
CPA_BUSY						
Affiliated	6.541	4.000	6.000	9.000	3.595	0.974
Nonaffiliated	6.596	3.000	6.000	9.000	4.051	
BIGN						
Affiliated	0.872	1.000	1.000	1.000	0.334	-12.653***
Nonaffiliated	0.803	1.000	1.000	1.000	0.398	
LISTED						
Affiliated	0.906	1.000	1.000	1.000	0.292	-13.504***
Nonaffiliated	0.840	1.000	1.000	1.000	0.367	

Panel C: BIGN observations (n = 15,626) vs. Non-BIGN observations (n = 3100)						
Variable	Mean	Q1	Median	Q3	S.D.	t
ABS_DA						
BIGN	0.072	0.023	0.052	0.098	0.068	0.257
Non-BIGN	0.073	0.022	0.051	0.096	0.073	
DA						
BIGN	-0.021	-0.073	-0.021	0.026	0.097	6.196***
Non-BIGN	-0.009	-0.061	-0.013	0.036	0.102	
DEP						
BIGN	0.169	0.019	0.065	0.234	0.226	52.503***
Non-BIGN	0.428	0.117	0.336	0.707	0.348	
SIZE						
BIGN	22.026	21.040	21.829	22.782	1.380	-15.839***
Non-BIGN	21.609	20.814	21.585	22.387	1.118	
GROWTH						
BIGN	0.089	-0.095	0.032	0.178	0.452	2.175**

(continued on next page)

Table 2 (continued)

Panel C: BIGN observations (n = 15,626) vs. Non-BIGN observations (n = 3100)						
Variable	Mean	Q1	Median	Q3	S.D.	t
Non-BIGN	0.110	-0.110	0.025	0.168	0.625	
CFO_SD						
BIGN	0.061	0.028	0.046	0.076	0.055	5.702***
Non-BIGN	0.068	0.027	0.048	0.079	0.092	
TENURE						
BIGN	6.682	4.000	6.000	9.000	3.842	13.043***
Non-BIGN	7.722	4.000	7.000	11.000	4.994	
AGE						
BIGN	25.033	16.000	23.000	33.000	12.147	20.125***
Non-BIGN	29.821	21.000	29.000	38.000	11.870	
LEV						
BIGN	0.380	0.249	0.366	0.493	0.175	8.284***
Non-BIGN	0.409	0.265	0.397	0.528	0.191	
LOSS						
BIGN	0.208	0.000	0.000	0.000	0.406	5.744***
Non-BIGN	0.254	0.000	0.000	1.000	0.435	
CPA_BUSY						
BIGN	7.249	5.000	7.000	9.000	3.756	-58.925***
Non-BIGN	3.152	2.000	3.000	4.000	2.106	
LISTED						
BIGN	0.875	1.000	1.000	1.000	0.331	-4.779***
Non-BIGN	0.844	1.000	1.000	1.000	0.363	
Affiliated						
BIGN	0.475	0.000	0.000	1.000	0.499	-12.653***
Non-BIGN	0.352	0.000	0.000	1.000	0.478	
Panel D: Listed observations (n = 16,290) vs. Non-listed observations (n = 2436)						
Variable	Mean	Q1	Median	Q3	S.D.	t
ABS_DA						
Listed	0.073	0.023	0.052	0.098	0.070	-2.970***
Non-Listed	0.068	0.022	0.051	0.091	0.064	
DA						
Listed	-0.017	-0.071	-0.018	0.030	0.099	-6.109***
Non-Listed	-0.030	-0.073	-0.028	0.014	0.089	
DEP						
Listed	0.210	0.025	0.095	0.299	0.263	2.183**
Non-Listed	0.223	0.011	0.069	0.330	0.299	
SIZE						
Listed	22.019	21.106	21.839	22.747	1.312	-16.384***
Non-Listed	21.542	20.470	21.250	22.334	1.510	
GROWTH						
Listed	0.094	-0.103	0.032	0.188	0.485	-0.835
Non-Listed	0.085	-0.043	0.026	0.113	0.483	
CFO_SD						
Listed	0.062	0.028	0.047	0.077	0.063	-0.479
Non-Listed	0.061	0.025	0.043	0.079	0.064	
TENURE						
Listed	6.813	4.000	6.000	9.000	4.029	3.604***
Non-Listed	7.132	4.000	6.000	10.000	4.353	
AGE						
Listed	26.285	17.000	25.000	34.000	12.031	-13.347***
Non-Listed	22.755	13.000	18.000	31.000	13.088	
LEV						
Listed	0.377	0.250	0.367	0.488	0.169	16.440***
Non-Listed	0.440	0.258	0.413	0.595	0.222	
LOSS						
Listed	0.216	0.000	0.000	0.000	0.412	-0.840
Non-Listed	0.209	0.000	0.000	0.000	0.407	
CPA_BUSY						
Listed	6.393	4.000	6.000	9.000	3.635	16.486***
Non-Listed	7.762	4.000	7.000	11.000	4.894	
BIGN						
Listed	0.839	1.000	1.000	1.000	0.367	-4.779***
Non-Listed	0.801	1.000	1.000	1.000	0.399	
Affiliated						
Listed	0.474	0.000	0.000	1.000	0.499	-13.504***
Non-Listed	0.328	0.000	0.000	1.000	0.470	

Notes a. Definitions of variables: ABS_DA = performance-matched modified-Jones model abnormal accruals, measured as absolute values; DA = performance-matched modified-Jones model abnormal accruals; DEP = the larger client importance measure between the two audit partners, where client importance for each partner is measured as the natural logarithm of the sum of client sales in the same affiliated business group from all clients of the audit partner divided by the natural logarithm of the sum of client sales from all listed and unlisted clients of the audit partner; SIZE = natural logarithm of total assets at the end of the year; GROWTH = growth rate of net sales over the previous year; CFO_SD = standard deviation of asset-scaled cash flows from operations over the past four years; TENURE = length of tenure for the audit-partner with relatively longer tenure, where the tenure of each partner is the number of consecutive years the company has retained the audit-partner; AGE = number of years since the client was incorporated; LEV = total liability divided by total equity; LOSS = 1 if the client reported loss in previous year and 0 otherwise; CPA_BUSY = signing auditor's number of clients; BIGN = a dummy variable equal to 1 if the company is audited by a Big N audit firm, else 0; LISTED = a dummy variable equal to 1 if the company is listed, else 0; Affiliated = a dummy variable equal to 1 if the company is affiliated with a business group, else 0.

b. ***, ** indicate significance at the 1% and 5% level, respectively (two-tailed);

c. Two-tailed t-statistics is calculated by deducting affiliated business groups variables from nonaffiliated businesses.

Table 3
Sample composition.

Panel A: Sample composition in term of client-years.								
Client-years	Affiliated Business Groups		Total	%	Nonaffiliated Businesses		Total	%
	Non listed	Listed			Non listed	Listed		
Non-BIGN	140	951	1091	12.81	345	1664	2009	19.68
BIGN	660	6767	7427	87.19	1291	6908	8199	80.32
Total	800	7718	8518	100.00	1636	8572	10,208	100.00
%	9.39	90.61			16.03	83.97		

Panel B: Sample composition in term of discrete clients								
Discrete clients	Affiliated business groups		Total	%	Nonaffiliated businesses		Total	%
	Non listed	Listed			Non listed	Listed		
Non-BIGN	21	136	157	16.41	53	231	284	23.24
BIGN	91	709	800	83.59	149	789	938	76.76
Total	112	845	957	100.00	202	1020	1222	100.00
%	11.70	88.30			16.53	83.47		

discretionary accruals (DA) and DEP is -0.002 and insignificantly different from zero. The coefficients do not support the negative impact of client importance on auditor independence. The significant negative coefficient of ABS_DA with TENURE (-0.091 with a significance level of 1%) indicates that the longer the client has retained the appointed auditor (TENURE), the smaller the ABS_DA reported by the client, and thus the higher the independence maintained by the auditor. The significant negative coefficients of ABS_DA with SIZE and AGE indicate that the mature clients tend to maintain lower magnitude of discretionary accruals. The significant positive coefficients of CFO_SD with ABS_DA and DA indicate that clients with higher cash flow volatility tend to have more positive and higher magnitude of discretionary accruals.

Moreover, the results show that DEP is positively correlated with SIZE, GROWTH, TENURE, AGE, LEV, and Affiliated, while negatively correlated with CFO_SD, LOSS, CPA_BUSY, BIGN, and LISTED. The preliminary results suggest the importance of including the control variables in our research design.

Panel B presents the pair-wise correlations of the eight DEP proxies of different clientele groups with dependent and control variables. $DEP^{UNAFF\&LIST\&NOBIGN}$ is significantly positively related with both DA and ABS_DA. $DEP^{AFF\&LIST\&BIGN}$ is significantly negatively related with both DA and ABS_DA. $DEP^{UNAFF\&LIST\&BIGN}$ is significantly positively related with only ABS_DA. $DEP^{UNAFF\&UNLIST\&BIGN}$ and $DEP^{AFF\&UNLIST\&NOBIGN}$ are significantly negatively related with only ABS_DA. $DEP^{AFF\&UNLIST\&BIGN}$ is positively related with ABS_DA but negatively related with DA. $DEP^{AFF\&LIST\&NOBIGN}$ is instead negatively related with ABS_DA but positively related with DA. $DEP^{UNAFF\&UNLIST\&NOBIGN}$ are insignificantly related with DA or ABS_DA. The preliminary results are largely supportive to our expectation that audit partners compromise their independence to the economic importance of business-group-affiliated clients. Out of the 88 coefficients of the eight DEP proxies with the eleven control variables, 70 are significant at 1% and 3 are significant at 5%.

4.3. Regression results

Table 5 presents our regression results using Eq. (2) to test H1. The regression results are estimated using truncated regression when DA+ and DA- are the dependent variables. In Panel A, we use our modified proxy of client importance, incorporating the impact of affiliated business groups. In Panel B, we use the Chi et al. (2012) proxy of client importance as a sensitivity test. The Chi et al. (2012) proxy is the natural logarithm of a client's sales divided by the sum of the natural logarithm of client sales from all clients of the audit partner.

In Table 5 Panel A, the coefficients of $DEP^{AFF\&UNLIST\&NOBIGN}$ is positive and significant at 1% in the DA+ regression, while the coefficients of

$DEP^{UNAFF\&UNLIST\&BIGN}$ is negative and significant at 5% and 10% respectively in the ABS_DA and DA+ regression. The coefficients of $DEP^{AFF\&UNLIST\&BIGN}$ are negative and marginally significant in the DA, ABS_DA, and DA- regressions. The coefficients of $DEP^{UNAFF\&LIST\&NOBIGN}$ is marginally significant and positive at 5% which provides weak evidence that non-Big N audit partners are more likely to compromise their independence than Big N audit partners (Chi et al., 2012). In sum, the result suggests that non-Big N auditors compromise their independence to economically important clients who are affiliated and unlisted and the clients exhibit upward earnings management.

With respect to the control variables, we find negative coefficients on the variables TENURE and AGE, but positive coefficients on the GROWTH in the ABS_DA and DA+ regressions. These results are consistent with Chen et al. (2008) and Chi et al. (2012). Moreover, we find negative coefficients on the variables SIZE and LOSS, but positive coefficients on the CFO_SD, LEV, and LISTED in the DA regressions. The results demonstrate that audit partners are more likely to maintain a higher level of independence for older clients with longer tenure; but less likely to do so for companies with higher growth in net sales, higher cash flow volatility, more debts and losses. These coefficients on BIGN, LISTED, and AFFILIATED are not directly interpretable because they measure the impact of the status of Big N and listed clients on clients' reported discretionary accruals when all versions of client importance variables are zero, which is economically impossible.

In sum, *ceteris paribus*, the result indicates that client importance has significant and negative effect on the independence of non-Big N audit partners as the clients are unlisted and affiliated with business groups. We do not find solid evidence that (1) Big N audit partners may compromise their independence for economically important clients, no matter whether the clients are affiliated or unaffiliated, listed or unlisted; or (2) audit partners may compromise their independence for listed clients, no matter whether the auditors are Big N or non-Big N.

To test the sensitivity of results to our modification of client importance proxy, we alternatively estimate the regression with Chi et al. (2012) proxy.² Table 5 Panel B reports the test results. The coefficients of $DEP^{UNAFF\&UNLIST\&BIGN}$ are negative in ABS_DA ($p = 0.001$) regression, and positive in DA ($p = 0.022$) and DA- ($p = 0.007$) regressions. The regression coefficients of $DEP^{UNAFF\&UNLIST\&NOBIGN}$ and $DEP^{AFF\&UNLIST\&NOBIGN}$ are positive in only DA regression. The results are generally consistent with Chi et al. (2012) but do not shed light on the economic importance of affiliated clients.

² Our DEP in Panel B is equivalent to the client importance proxy (CIMP) in Chi et al. (2012).

4.4. Sensitivity tests

4.4.1. Two-stage Heckman Inverse mills Ratio (IMR) method

We consider that selection bias could occur if there are unobservable factors affecting the relation of client importance and auditor

independence across affiliated and unaffiliated clients in our data. As illustrated in [Lennox, Francis, and Wang \(2012\)](#), this can result in biased coefficients when using ordinary least squares regressions. To mitigate the potential effects of such selection bias, we used the IMR method as suggested by [Heckman \(1979\)](#) and demonstrated by [Tucker \(2010\)](#).

Table 4
Pearson correlation coefficients.

Panel A: Pearson correlation matrix (N = 18,726)													
	ABS_DA	DA	DEP	SIZE	GROWTH	CFO_SD	CPA_TENURE	AGE	LEV	LOSS	CPA_BUSY	BIGN	LISTED
DA	-0.047*** (0.000)	1.000											
DEP	-0.018** (0.013)	-0.002 (0.811)	1.000										
SIZE	-0.083*** (0.000)	-0.002 (0.742)	0.355*** (0.000)	1.000									
GROWTH	0.130*** (0.000)	0.113*** (0.000)	0.024*** (0.001)	0.008 (0.280)	1.000								
CFO_SD	0.360*** (0.000)	0.043*** (0.000)	-0.031*** (0.000)	-0.192*** (0.000)	0.108*** (0.000)	1.000							
TENURE	-0.091*** (0.000)	0.008 (0.246)	0.079*** (0.000)	0.135*** (0.000)	-0.049*** (0.000)	-0.098*** (0.000)	1.000						
AGE	-0.180*** (0.000)	0.076*** (0.000)	0.155*** (0.000)	0.312*** (0.000)	-0.068*** (0.000)	-0.183*** (0.000)	0.176*** (0.000)	1.000					
LEV	0.105*** (0.000)	0.005 (0.504)	0.106*** (0.000)	0.141*** (0.000)	0.067*** (0.000)	0.100*** (0.000)	-0.038*** (0.000)	0.019*** (0.008)	1.000				
LOSS	0.133*** (0.000)	-0.245*** (0.000)	-0.038*** (0.000)	-0.137*** (0.000)	-0.148*** (0.000)	0.080*** (0.000)	-0.055*** (0.000)	-0.037*** (0.000)	0.169*** (0.000)	1.000			
CPA_BUSY	0.013* (0.069)	-0.032*** (0.000)	-0.321*** (0.000)	-0.002 (0.748)	0.011 (0.148)	-0.003 (0.726)	-0.002 (0.832)	-0.152*** (0.000)	-0.005 (0.518)	-0.031*** (0.000)	1.000		
BIGN	-0.002 (0.797)	-0.045*** (0.000)	-0.358*** (0.000)	0.115*** (0.000)	-0.016** (0.030)	-0.042*** (0.000)	-0.095*** (0.000)	-0.146*** (0.000)	-0.060*** (0.000)	-0.042*** (0.000)	0.396*** (0.000)	1.000	
LISTED	0.022*** (0.003)	0.045*** (0.000)	-0.016** (0.029)	0.119*** (0.000)	0.006 (0.403)	0.004 (0.631)	-0.026*** (0.000)	0.097*** (0.000)	-0.119*** (0.000)	0.006 (0.401)	-0.120*** (0.000)	0.035*** (0.000)	1.000
Affiliated	-0.071*** (0.000)	-0.025*** (0.001)	0.384*** (0.000)	0.605*** (0.000)	-0.010 (0.166)	-0.110*** (0.000)	0.122*** (0.000)	0.186*** (0.000)	0.040*** (0.000)	-0.093*** (0.000)	-0.007 (0.330)	0.092*** (0.000)	0.098*** (0.000)

Panel B: Pearson correlation matrix between DEP variables and other variables									
Variable	DEP ^{UNAFF} &LIST&BIGN	DEP ^{AFF} &LIST&BIGN	DEP ^{UNAFF} &UNLIST&BIGN	DEP ^{AFF} &UNLIST&BIGN	DEP ^{UNAFF} &LIST&NOBIGN	DEP ^{AFF} &LIST&NOBIGN	DEP ^{UNAFF} &UNLIST&NOBIGN	DEP ^{AFF} &UNLIST&NOBIGN	
ABS_DA	0.016** (0.029)	-0.030*** (0.000)	-0.027*** (0.000)	0.015** (0.045)	0.045*** (0.000)	-0.035*** (0.000)	0.000 (0.970)	-0.023*** (0.002)	
DA	0.010 (0.169)	-0.031*** (0.000)	-0.010 (0.162)	-0.039*** (0.000)	0.037*** (0.000)	0.021*** (0.005)	0.000 (0.983)	0.008 (0.297)	
SIZE	-0.066*** (0.000)	0.485*** (0.000)	0.117*** (0.000)	0.023*** (0.002)	-0.105*** (0.000)	0.092*** (0.000)	-0.066*** (0.000)	0.023*** (0.002)	
GROWTH	0.023*** (0.002)	-0.005 (0.457)	-0.007 (0.331)	0.003 (0.674)	0.038*** (0.000)	0.002 (0.810)	0.007 (0.315)	-0.005 (0.472)	
CFO_SD	0.011 (0.121)	-0.064*** (0.000)	-0.026*** (0.000)	0.009 (0.217)	0.056*** (0.000)	-0.022*** (0.003)	-0.005 (0.489)	-0.007 (0.309)	
TENURE	-0.068*** (0.000)	0.025*** (0.001)	-0.034*** (0.000)	-0.012 (0.115)	-0.003 (0.643)	0.132*** (0.000)	0.043*** (0.000)	0.049*** (0.000)	
AGE	-0.052*** (0.000)	0.057*** (0.000)	0.078*** (0.000)	-0.034*** (0.000)	0.059*** (0.000)	0.182*** (0.000)	-0.042*** (0.000)	0.033*** (0.000)	
LEV	0.018** (0.016)	0.019*** (0.009)	0.083*** (0.000)	0.054*** (0.000)	0.045*** (0.000)	0.018** (0.015)	0.023*** (0.002)	0.065*** (0.000)	
LOSS	-0.024*** (0.001)	-0.044*** (0.000)	0.016** (0.026)	-0.021*** (0.005)	0.032*** (0.000)	-0.022*** (0.003)	0.001 (0.936)	-0.005 (0.504)	
CPA_BUSY	-0.044*** (0.000)	-0.059*** (0.000)	-0.001 (0.915)	0.067*** (0.000)	-0.254*** (0.000)	-0.202*** (0.000)	-0.099*** (0.000)	-0.081*** (0.000)	
BIGN	0.129*** (0.000)	0.225*** (0.000)	0.042*** (0.000)	0.070*** (0.000)	-0.491*** (0.000)	-0.452*** (0.000)	-0.215*** (0.000)	-0.176*** (0.000)	
LISTED	0.112*** (0.000)	0.195*** (0.000)	-0.246*** (0.000)	-0.404*** (0.000)	0.085*** (0.000)	0.078*** (0.000)	-0.248*** (0.000)	-0.203*** (0.000)	
Affiliated	-0.266*** (0.000)	0.553*** (0.000)	-0.087*** (0.000)	0.171*** (0.000)	-0.200*** (0.000)	0.220*** (0.000)	-0.087*** (0.000)	0.086*** (0.000)	

Notes a. ***, ** indicate significance at the 1% and 5% level, respectively (two-tailed).
 b. All variables in Panel A are as defined in [Table 2](#). Other variables in Panel B are defined as: DEP^{UNAFF}&LIST&BIGN = DEP if the client is a listed company audited by Big N audit partners but not affiliated with any business group, and 0 otherwise. DEP^{AFF}&LIST&BIGN = DEP if the client is a listed company audited by Big N audit partners and affiliated with any business group, and 0 otherwise. DEP^{UNAFF}&UNLIST&BIGN = DEP if the client is an unlisted company audited by Big N audit partners but not affiliated with any business group, and 0 otherwise. DEP^{AFF}&UNLIST&BIGN = DEP if the client is an unlisted company audited by Big N audit partners and affiliated with any business group, and 0 otherwise. DEP^{UNAFF}&LIST&NOBIGN = DEP if the client is a listed company audited by non-Big N audit partners but not affiliated with any business group, and 0 otherwise. DEP^{AFF}&LIST&NOBIGN = DEP if the client is a listed company audited by non-Big N audit partners and affiliated with any business group, and 0 otherwise. DEP^{UNAFF}&UNLIST&NOBIGN = DEP if the client is an unlisted company audited by non-Big N audit partners but not affiliated with any business group, and 0 otherwise. DEP^{AFF}&UNLIST&NOBIGN = DEP if the client is an unlisted company audited by non-Big N audit partners and affiliated with any business group, and 0 otherwise.

Table 5
Auditor independence and client importance.

Panel A: With modified client importance proxy (N = 18,726)				
	DA	ABS_DA	DA ⁺	DA ⁻
Intercept	0.045* (0.076)	-0.011 (0.600)	-0.492 (0.146)	0.155*** (0.001)
DEP ^{UNAFF&LIST&BIGN}	-0.013 (0.370)	-0.001 (0.987)	-0.078 (0.565)	-0.035 (0.318)
DEP ^{AFF&LIST&BIGN}	-0.010* (0.062)	0.001 (0.718)	-0.046 (0.600)	-0.015 (0.171)
DEP ^{UNAFF&UNLIST&BIGN}	-0.001 (0.961)	-0.017** (0.037)	-0.773* (0.091)	0.062 (0.161)
DEP ^{AFF&UNLIST&BIGN}	-0.025* (0.055)	0.025** (0.012)	0.211 (0.206)	-0.065** (0.038)
DEP ^{UNAFF&LIST&NOBIGN}	0.002 (0.832)	0.012** (0.037)	0.179** (0.023)	-0.001 (0.962)
DEP ^{AFF&LIST&NOBIGN}	-0.006 (0.456)	0.003 (0.581)	0.115 (0.301)	-0.003 (0.903)
DEP ^{UNAFF&UNIST&NOBIGN}	0.002 (0.903)	0.014 (0.143)	0.254 (0.121)	-0.022 (0.497)
DEP ^{AFF&UNLIST&NOBIGN}	0.009 (0.408)	0.007 (0.393)	0.249*** (0.002)	0.001 (0.998)
SIZE	-0.003*** (0.004)	0.002** (0.014)	-0.016 (0.375)	-0.004* (0.059)
GROWTH	0.014*** (0.000)	0.014*** (0.000)	0.080*** (0.000)	-0.017*** (0.000)
CFO_SD	0.081*** (0.001)	0.320*** (0.000)	0.945*** (0.000)	-0.517*** (0.000)
TENURE	-0.001 (0.255)	-0.001** (0.012)	-0.005 (0.133)	0.001 (0.332)
AGE	0.001*** (0.000)	-0.001*** (0.000)	-0.006*** (0.000)	0.002*** (0.000)
LEV	0.026*** (0.001)	0.018*** (0.000)	0.417*** (0.005)	-0.033*** (0.001)
LOSS	-0.061*** (0.000)	0.018*** (0.000)	-0.273*** (0.000)	-0.077*** (0.000)
CPA_BUSY	-0.001 (0.112)	0.001 (0.157)	0.004 (0.150)	-0.001 (0.406)
BIGN	-0.005 (0.208)	0.001 (0.802)	0.014 (0.737)	-0.001 (0.940)
LISTED	0.017*** (0.000)	0.006*** (0.003)	0.181** (0.034)	0.001 (0.876)
AFFILIATED	-0.005 (0.111)	-0.005*** (0.008)	-0.082 (0.100)	0.009* (0.075)
Year and Industry	Included	Included	Included	Included
N	18,726	18,726	7246	11,480
adj. R ²	0.087	0.187	-	-
F/wald statistics	36.32	48.67	270.32	1090.17

Panel B: With Chi et al. (2012) proxy of client importance (N = 18,726).				
	DA	ABS_DA	DA ⁺	DA ⁻
Intercept	0.036 (0.162)	-0.004 (0.850)	-0.414* (0.261)	0.138*** (0.006)
DEP ^{UNAFF&LIST&BIGN}	-0.003 (0.685)	-0.004 (0.343)	-0.030 (0.579)	-0.001 (0.994)
DEP ^{AFF&LIST&BIGN}	-0.008 (0.107)	-0.002 (0.547)	-0.053 (0.591)	0.004 (0.609)
DEP ^{UNAFF&UNLIST&BIGN}	0.031** (0.022)	-0.027*** (0.001)	-0.351 (0.119)	0.082*** (0.007)
DEP ^{AFF&UNLIST&BIGN}	0.028 (0.144)	0.016 (0.213)	0.242 (0.297)	-0.021 (0.664)
DEP ^{UNAFF&LIST&NOBIGN}	0.009 (0.189)	0.008 (0.114)	0.133* (0.092)	0.002 (0.868)
DEP ^{AFF&LIST&NOBIGN}	-0.001 (0.909)	0.002 (0.711)	0.080 (0.450)	0.007 (0.692)
DEP ^{UNAFF&UNIST&NOBIGN}	0.030** (0.018)	0.007 (0.367)	0.168 (0.308)	0.010 (0.752)
DEP ^{AFF&UNLIST&NOBIGN}	0.029*** (0.000)	-0.004 (0.296)	0.047 (0.798)	0.058 (0.078)
SIZE	-0.004*** (0.001)	0.002** (0.020)	-0.019 (0.329)	-0.004* (0.057)
GROWTH	0.014*** (0.000)	0.014*** (0.000)	0.080*** (0.000)	-0.017*** (0.000)
CFO_SD	0.080*** (0.002)	0.319*** (0.000)	0.921*** (0.000)	-0.519*** (0.000)
TENURE	-0.001	-0.001**	-0.005	0.001

(continued on next page)

Table 5 (continued)

Panel B: With Chi et al. (2012) proxy of client importance (N = 18,726).				
	DA	ABS_DA	DA ⁺	DA ⁻
AGE	(0.335) 0.001*** (0.000)	(0.012) -0.001*** (0.000)	(0.164) -0.006*** (0.001)	(0.281) 0.002*** (0.000)
LEV	0.026*** (0.001)	0.018*** (0.000)	0.422*** (0.005)	-0.033*** (0.001)
LOSS	-0.061*** (0.000)	0.018*** (0.000)	-0.277*** (0.000)	-0.077*** (0.000)
CPA_BUSY	-0.001 (0.450)	0.001 (0.611)	0.003 (0.219)	0.001 (0.846)
BIGN	-0.001 (0.738)	0.003 (0.426)	0.027 (0.639)	-0.003 (0.798)
LISTED	0.028*** (0.000)	0.002 (0.432)	0.150 (0.134)	0.016 (0.102)
AFFILIATED	-0.006 (0.112)	-0.005** (0.032)	-0.077* (0.067)	0.004 (0.533)
Year and Industry	Included	Included	Included	Included
N	18,726	18,726	7246	11,480
adj. R ²	0.088	0.187	-	-
F/wald statistics	36.55	48.26	263.06	1084.06

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity. OLS regression for ABSDA / DA and truncated regressions for DA⁺ and DA⁻.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by client and by year) to adjust for both cross-sectional and time-series dependences in our data (Gow, Ormazabal, & Taylor, 2010; Petersen, 2009).

c. Variables are as defined in Table 2.

We compute the IMR with our first-stage model, and then include the IMR in our second-stage model as a bias correction term. Specifically, we estimate the likelihood that a client is affiliated in the first-stage. According to (Claessens et al., 2002; Jian & Wong, 2003; Kim & Yi, 2006), we include client size, leverage rate, auditor's tenure, client age, ownership percentage hold by directors, ownership percentage hold by top management, return on asset (ROA) as explanatory variables in the first stage model. In addition, Claessens et al. (2002) indicates that affiliated clients have higher cross-hold ownership and are more likely to have pyramid organization structure than unaffiliated clients. Therefore, we also include clients' organizational structure (GOLD) and the cross-hold ownership percentage as additional control variables. The results are presented in Table 6 Panel A. In the second-stage we test the association of auditor independence and our new proxy of client importance, after controlling for both observable differences using the regression approach and unobservable differences using the IMR approach.

Our second-stage results are presented in Panel B, which are consistent with the major results in Table 5 Panel A after the inclusion of IMR. That is, the control variable IMR is not significant in our models for H1. We thus do not find evidence of self-selection bias in our analysis.

4.4.2. Propensity Score Matching (PSM) method

We further use the propensity score matching (PSM) approach recommended by Lennox et al. (2012) to mitigate the potential effects of such selection bias. We match the affiliated firms to unaffiliated firm in term of size, which give us a sample of 17,008 firm-year observations. We then rerun the regression with the PSM sample. The PSM results are presented in Table 7, which are consistent with the major results in Table 5 Panel A. We thus do not find evidence of self-selection bias in our analysis.

4.4.3. Modified audit opinion as alternative proxy of independence

We use first time going concern opinion as alternative measure of auditor independence to test the robustness of the results, following Hossain et al. (2016). We define an audit opinion as first time going concern opinion if the auditor issues modified audit report for reasons pertaining to going-concern issues while the previous year's audit report contained no similar modifications. There are 18,726 client-years in the full sample, of which 79 client-years have first time going concern opinions. We code audit opinions (FIRST_GC) as 1 if it is first time going

concern opinion and 0 otherwise. A negative association of FIRST_GC and our DEP measures means a lower propensity of auditors to issue first time going concern opinions and thus suggest impairment of auditor independence.

Table 8 presents our regression results. Only the coefficient of DEP^{AFF&UNLIST&NOBIGN} is significant negative with $p = .001$. The results are consistent with Table 5 Panel A.

With respect to the control variables, we find significant positive coefficients on ARINV, LEV, TURNOVER, LOSS, and BIGN, and significant negative coefficients on the QUICK and ROA variable, which are consistent with Hossain et al. (2016).

4.4.4. Additional control variables

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) stated that, in many countries, expropriation of minority shareholders and creditors by the controlling shareholders is extensive. Fan and Wong (2005) indicated that this agency conflict can be exacerbated as the controlling owner leverages control through stock pyramids or cross-shareholdings. With such ownership concentration, clientele' financial reporting is likely to be opaque because of their expropriation and rent-seeking incentive, which increases audit risks. Fan and Wong (2005) documented that Big 5 auditors set a lower threshold for audit modifications to protect themselves from the additional litigation risks. Therefore, we include two dummies of stock pyramids and cross-holdings as additional control variables for the auditors' differential behavior in such concentrated ownership structures.

Related party transactions are viewed as a fraud risk factor in authoritative literature. Gordon, Henry, Lauwers, and Reed (2007) listed three major reasons why related party transactions are difficult to audit. First, it may be difficult to identify related parties and transactions warranting examination. Second, auditors have to rely on management to provide detailed information about related party transactions. Third, despite the significantly improved internal control regulations since Sarbanes-Oxley, internal controls still have difficulty tracking related party transactions. Therefore, we add two common proxies of related party transactions to control for the additional audit risk.

In sum, we add four variables to control for the corporate structure and related party transactions. The four variables are (1) CROSSHOLD, which is coded as 1 if the client cross-holds another company, and 0

Table 6
Auditor independence and client importance with the two-stage heckman inverse mills ratio (IMR) as additional control variable.

Panel A: First stage regression.	
	Affiliated
INTERCEPT	-18.079*** (0.000)
SIZE	0.800*** (0.000)
LEV	-0.256 (0.148)
CPA_TENURE	0.020*** (0.002)
AGE	-0.002 (0.595)
BIGN	0.141** (0.041)
LISTED	0.170 (0.241)
DIR_SHARE	-0.003 (0.324)
MANA_SHARE	-0.018* (0.086)
GOLD	1.042*** (0.000)
CROSS_HOLD	0.050 (0.477)
ROA	0.289 (0.280)
N	18,726
pseudo R ²	0.388
LR chi2(11)	3354.85

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by firm and by year) to adjust for both cross-sectional and time-series dependence in our data (Gow et al., 2010; Petersen, 2009).

c. Variables definition: DIR_SHARE = the percentage of stock shares hold by directors; MANA_SHARE = the percentage of stock shares hold by top managers; GOLD = 1 if client has a pyramid structure and 0 otherwise; CROSS_HOLD is 1 if the client cross-holds another company and 0 otherwise; ROA is net income divided by average assets; IMR is the two-stage Heckman Inverse Mills Ratio (IMR) estimated in our first-stage model. Other variables are as defined in Table 2.

Panel B: Second stage regression.

	DA	ABS_DA	DA ⁺	DA ⁻
Intercept	0.035 (0.464)	-0.015 (0.580)	-0.267 (0.602)	0.224** (0.015)
DEP ^{UNAFF&LIST&BIGN}	-0.013 (0.374)	-0.001 (0.995)	-0.083 (0.541)	-0.037 (0.298)
DEP ^{AFF&LIST&BIGN}	-0.011* (0.058)	0.001 (0.720)	-0.045 (0.612)	-0.015 (0.175)
DEP ^{UNAFF&UNLIST&BIGN}	-0.001 (0.957)	-0.017** (0.036)	-0.769* (0.093)	0.062 (0.157)
DEP ^{AFF&UNLIST&BIGN}	-0.025* (0.056)	0.025** (0.012)	0.213 (0.201)	-0.064** (0.041)
DEP ^{UNAFF&LIST&NOBIGN}	0.002 (0.825)	0.012** (0.037)	0.180** (0.023)	-0.001 (0.953)
DEP ^{AFF&LIST&NOBIGN}	-0.006 (0.464)	0.003 (0.578)	0.115 (0.302)	-0.003 (0.884)
DEP ^{UNAFF&UNLIST&NOBIGN}	0.002 (0.903)	0.014 (0.143)	0.258 (0.114)	-0.023 (0.489)
DEP ^{AFF&UNLIST&NOBIGN}	0.009 (0.393)	0.007 (0.385)	0.247*** (0.003)	-0.002 (0.973)
SIZE	-0.003 (0.162)	0.002** (0.045)	-0.025 (0.294)	-0.007* (0.076)
GROWTH	0.014*** (0.000)	0.014*** (0.000)	0.080*** (0.000)	-0.017*** (0.000)
CFO_SD	0.081*** (0.001)	0.320*** (0.000)	0.945*** (0.000)	-0.514*** (0.000)
TENURE	-0.001 (0.309)	-0.001** (0.019)	-0.005 (0.112)	0.001 (0.466)
AGE	0.001*** (0.000)	-0.001*** (0.000)	-0.006*** (0.000)	0.002*** (0.000)

Table 6 (continued)

Panel B: Second stage regression.				
	DA	ABS_DA	DA ⁺	DA ⁻
LEV	0.025*** (0.001)	0.018*** (0.000)	0.422*** (0.005)	-0.031*** (0.003)
LOSS	-0.061*** (0.000)	0.018*** (0.000)	-0.272*** (0.000)	-0.077*** (0.000)
CPA_BUSY	-0.001 (0.111)	0.001 (0.155)	0.004 (0.156)	-0.001 (0.371)
IMR	0.001 (0.778)	0.001 (0.847)	-0.020 (0.575)	-0.007 (0.357)
BIGN	-0.005 (0.229)	0.001 (0.789)	0.012 (0.766)	-0.002 (0.877)
LISTED	0.018*** (0.000)	0.006*** (0.002)	0.178** (0.039)	0.001 (0.999)
AFFILIATED	-0.005 (0.103)	-0.005*** (0.009)	-0.086* (0.088)	0.007 (0.167)
Year and Industry	Included	Included	Included	Included
N	18,726	18,726	7246	11,480
adj. R ²	0.087	0.187	-	-
F/wald statistics	35.63	47.71	270.96	1093.87

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity. OLS regression for ABSDA / DA and truncated regressions for DA+ and DA-.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by client and by year) to adjust for both cross-sectional and time-series dependence in our data (Gow et al., 2010; Petersen, 2009).

c. Other variables are as defined in Table 2.

otherwise; (2) GOLD, which is coded as 1 if the client has a pyramid structure, and 0 otherwise; (3) RELATION1, which is coded as the receivables of the related parties scaled by the total receivables of the company; (4) RELATION2, which is coded as the sales with the related parties divided by the total sales of the company with all customers. The results are tabulated in Table 9, which is consistent with our major results in Table 5 Panel A.

5. Conclusions and limitations

We examine whether audit partners are more likely to compromise their independence for economically important clients of certain type, especially the clients affiliated with business groups, given the important position of business groups in emerging markets. We use Taiwan data in this study because (1) audit partners in Taiwan are required to sign the audit reports since 1983, which allows us to explore the research question at the partner level with a sufficient sample size; (2) affiliated business groups play an important role in emerging markets, including the Taiwanese capital market; and (3) both unlisted and listed clients are required to be audited and to publicly disclose their financial statements in Taiwan, which allows us to include both types of clients in our sample and construct a more complete client portfolio for each audit partner.

We measure client importance at the audit partner level based on client sales in the same affiliated business group, following Chi et al. (2012). However, we make a modification by incorporating the economic impact of affiliated business groups into the calculation of the client importance proxy. We employ clients' absolute and signed discretionary accruals as proxies for auditor independence. Our findings confirm that there is no evidence on Big N audit partners compromising their independence for economically important clients no matter whether the clients are business-group-affiliated or nonaffiliated, listed or unlisted. However, we find that the previously documented relation between client importance and audit partner independence in non-Big N audit partners rests with business-group-affiliated and unlisted clients. Therefore we conclude that non-Big N audit partners tend to compromise their independence for economically important clients who are within affiliated business groups and not listed in stock exchanges while

there is no such evidence for nonaffiliated or listed clients of non-Big N auditors.

Our contribution is threefold. First, the incorporation of aggregate effect of business group affiliation in the measure of client importance may reduce the measurement error in proxies of client importance, providing a more effective proxy for the empirical analysis.

Second, our findings cast some doubt on the conclusions of previous research that non-Big N audit partners compromise their independence for economically important clients. In particular, we show that the association between client importance and auditor independence stems from business-group-affiliated and unlisted companies audited by non-Big N audit partners while there is no evidence of such a relation for nonaffiliated or listed companies audited by non-Big N audit partners. As such, we point out how the Chi et al. (2012) results appear to be due to non-Big N partners compromising to affiliated and unlisted clients, rather than the partners compromise on other clients without considering their group affiliation and whether they are listed or not. Overall, we find the evidence to support the claim that non-Big N

auditors compromise for economically important especially for business-group-affiliated and unlisted clients.

Third, our findings have implications for regulation on auditor independence as well as affiliated business groups. Both IAASB and PCAOB have expressed strong concerns regarding the audit quality of group financial statements. Our study implies that non-Big N auditors compromise their independence for business-group-affiliated and unlisted clients of economic importance. Regulation may strengthen the requirements regarding the risk control and responsibility sharing in the audit of group financial statements. It has been argued that the efficiency of information exchange between investors and subsidiaries can be increased if a single audit partner is assigned to audit the consolidated financial statements of an affiliated business group. Doing so also enables audit partner's to more closely observe the financial conditions of the affiliated business group. The Financial Supervisory Commission in

Table 7
Auditor independence and client importance PSM results (N = 17,008).

	DA	ABS_DA	DA ⁺	DA ⁻
Intercept	0.045* (0.091)	-0.042** (0.020)	-0.474 (0.193)	0.162*** (0.001)
DEP ^{UNAFF&LIST&BIGN}	-0.021 (0.168)	0.002 (0.857)	-0.052 (0.698)	-0.047 (0.218)
DEP ^{AFF&LIST&BIGN}	-0.010* (0.073)	-3.32E-04 (0.925)	-0.058 (0.551)	-0.014 (0.215)
DEP ^{UNAFF&UNLIST&BIGN}	-0.006 (0.609)	-0.018* (0.054)	-1.071* (0.057)	0.047 (0.254)
DEP ^{AFF&UNLIST&BIGN}	-0.031** (0.022)	0.023** (0.024)	0.180 (0.330)	-0.073** (0.029)
DEP ^{UNAFF&LIST&NOBIGN}	-0.001 (0.908)	0.011** (0.044)	0.220** (0.022)	-0.002 (0.933)
DEP ^{AFF&LIST&NOBIGN}	-0.007 (0.384)	-0.001 (0.914)	0.122 (0.356)	-0.001 (0.950)
DEP ^{UNAFF&UNLIST&NOBIGN}	-0.013 (0.389)	0.014 (0.164)	0.145 (0.497)	-0.048 (0.151)
DEP ^{AFF&UNLIST&NOBIGN}	0.003 (0.774)	0.005 (0.573)	0.238** (0.018)	-0.003 (0.961)
SIZE	-0.003*** (0.005)	0.003*** (0.000)	-0.022 (0.276)	-0.004* (0.061)
GROWTH	0.014*** (0.000)	0.014*** (0.000)	0.082*** (0.000)	-0.017*** (0.000)
CFO_SD	0.077*** (0.001)	0.478*** (0.000)	0.916*** (0.000)	-0.502*** (0.000)
TENURE	-1.30E-04 (0.489)	-2.43E-04** (0.027)	-0.005 (0.189)	4.69E-04 (0.370)
AGE	0.001*** (0.000)	-2.95E-04*** (0.000)	-0.006*** (0.004)	0.002*** (0.000)
LEV	0.025*** (0.002)	0.014*** (0.000)	0.467*** (0.006)	-0.037*** (0.001)
LOSS	-0.061*** (0.000)	0.020*** (0.000)	-0.278*** (0.001)	-0.079*** (0.000)
CPA_BUSY	-0.001** (0.022)	1.44E-04 (0.371)	0.001 (0.623)	-0.001 (0.265)
BIGN	-0.005 (0.238)	-2.60E-04 (0.926)	0.034 (0.506)	0.001 (0.943)
LISTED	0.013*** (0.000)	0.006** (0.015)	0.180** (0.059)	-0.002 (0.812)
AFFILIATED	-0.005 (0.106)	-0.005*** (0.009)	-0.084 (0.116)	0.008* (0.073)
Year and Industry	Included	Included	Included	Included
N	17,008	17,008	6662	10,446
adj. R ²	0.092	0.214	-	-
F/wald statistics	34.07	58.18	195.88	833.30

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity. OLS regression for ABSDA / DA and truncated regressions for DA⁺ and DA⁻.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by client and by year) to adjust for both cross-sectional and time-series dependence in our data (Gow et al., 2010; Petersen, 2009).

c. Other variables are as defined in Table 2.

Table 8
auditor independence and client importance with first time going concern opinions as alternative proxy of auditor independence.

	FIRST_GC
INTERCEPT	7.658** (0.010)
DEP ^{UNAFF&LIST&BIGN}	-0.997 (0.538)
DEP ^{AFF&LIST&BIGN}	-0.412 (0.742)
DEP ^{UNAFF&UNLIST&BIGN}	-1.373 (0.479)
DEP ^{AFF&UNLIST&BIGN}	-1.112 (0.531)
DEP ^{UNAFF&LIST&NOBIGN}	0.843 (0.209)
DEP ^{AFF&LIST&NOBIGN}	1.794** (0.032)
DEP ^{UNAFF&UNLIST&NOBIGN}	2.340 (0.161)
DEP ^{AFF&UNLIST&NOBIGN}	-79.755*** (0.001)
CPA_TENURE	0.026 (0.436)
QUICK	-0.856*** (0.000)
ARINV	0.610* (0.092)
LEV	3.050*** (0.002)
TURNOVER	0.475** (0.020)
ROA	-11.681*** (0.000)
LOSS	2.345** (0.012)
AGE	0.002 (0.843)
SIZE	-0.007 (0.954)
ABS_DA	0.332 (0.812)
BIGN	0.657* (0.087)
LISTED	0.227 (0.552)
AFFILIATED	-0.069 (0.887)
N	18,726
pseudo R ²	0.440
Wald chi2(21)	600.03

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by client and by year) to adjust for both cross-sectional and time-series dependence in our data (Gow et al., 2010; Petersen, 2009).

c. Other variables are as defined in Table 2.

Table 9
Auditor independence and client importance with additional control variable.

	DA	ABS_DA	DA ⁺	DA ⁻
Intercept	0.048* (0.066)	-0.010 (0.617)	-0.488 (0.152)	0.160*** (0.001)
DEP ^{UNAFF&LIST&BIGN}	-0.014 (0.342)	-0.001 (0.983)	-0.075 (0.578)	-0.036 (0.300)
DEP ^{AFF&LIST&BIGN}	-0.007 (0.209)	0.001 (0.838)	-0.035 (0.689)	-0.012 (0.276)
DEP ^{UNAFF&UNLIST&BIGN}	0.001 (0.955)	-0.017** (0.040)	-0.792* (0.089)	0.062 (0.157)
DEP ^{AFF&UNLIST&BIGN}	-0.024* (0.069)	0.025** (0.014)	0.204 (0.213)	-0.063*** (0.044)
DEP ^{UNAFF&LIST&NOBIGN}	0.002 (0.830)	0.012** (0.038)	0.169** (0.033)	-0.001 (0.988)
DEP ^{AFF&LIST&NOBIGN}	-0.005 (0.549)	0.003 (0.583)	0.113 (0.304)	-0.002 (0.922)
DEP ^{UNAFF&UNLIST&NOBIGN}	0.001 (0.964)	0.014 (0.139)	0.242 (0.133)	-0.023 (0.482)
DEP ^{AFF&UNLIST&NOBIGN}	0.010 (0.295)	0.007 (0.384)	0.251*** (0.000)	0.002 (0.973)
SIZE	-0.003*** (0.004)	0.002** (0.015)	-0.016 (0.390)	-0.005*** (0.054)
GROWTH	0.014*** (0.000)	0.014*** (0.000)	0.078*** (0.000)	-0.016*** (0.000)
CFO_SD	0.082*** (0.001)	0.320*** (0.000)	0.943*** (0.000)	-0.516*** (0.000)
TENURE	-0.001 (0.276)	-0.001** (0.013)	-0.005 (0.129)	0.001 (0.330)
AGE	0.001*** (0.000)	-0.001*** (0.000)	-0.006*** (0.000)	0.002*** (0.000)
LEV	0.026*** (0.001)	0.018*** (0.000)	0.416*** (0.005)	-0.033*** (0.002)
LOSS	-0.061*** (0.000)	0.018*** (0.000)	-0.270*** (0.000)	-0.077*** (0.000)
CPA_BUSY	-0.001 (0.143)	0.001 (0.161)	0.004 (0.130)	-0.001 (0.470)
CROSS_HOLD	0.002 (0.371)	0.001 (0.869)	0.001 (0.975)	0.003 (0.613)
GOLD	-0.007*** (0.010)	0.001 (0.737)	-0.025 (0.418)	-0.007 (0.290)
RELATION1	-0.003 (0.402)	0.001 (0.960)	-0.051 (0.359)	-0.011 (0.188)
RELATION2	0.022*** (0.001)	0.001 (0.623)	0.142* (0.071)	0.028** (0.040)
BIGN	-0.005 (0.174)	0.001 (0.803)	0.009 (0.832)	-0.001 (0.932)
LISTED	0.016*** (0.000)	0.006*** (0.003)	0.170** (0.033)	0.001 (0.983)
AFFILIATED	-0.005 (0.116)	-0.005*** (0.006)	-0.082* (0.099)	0.009* (0.056)
Year and Industry	Included	Included	Included	Included
N	18,726	18,726	7246	11,480
adj. R ²	0.089	0.187	-	-
F/wald statistics	34.14	45.02	274.45	1102.75

Notes: a. Numbers in parentheses represent p-values. Coefficients on industry and year dummies omitted for simplicity. OLS regression for ABSDA / DA and truncated regressions for DA⁺ and DA⁻.

b. ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed); We used the two-way cluster-robust standard errors (cluster by client and by year) to adjust for both cross-sectional and time-series dependence in our data (Gow et al., 2010; Petersen, 2009).

c. Definitions of variables: CROSSHOLD = 1 if the company cross-holds another company, and 0 otherwise; GOLD = 1 if the client has a pyramid structure, and 0 otherwise, RELATION1 = the receivables of the related parties scaled by the total receivables of the company, RELATION2 = the sales with the related parties divided by the total sales of the company with all customers. Other variables are as defined in Table 2.

Taiwan is now proposing a “main audit partner system”, in which an audit partner who audits subsidiaries exceeding 50% of the consolidated financial statements (on an asset or operating income basis) assumes the role of main audit partner. Given these arguments, we believe that our findings help to inform the policy debate and can serve as useful reference for legislators and regulators when enacting evidence-based policy with respect to audit jurisdiction, or imposing pertinent discipline on auditors in the future. It will be also interesting for future research to examine whether our conclusions can be generalized to other emerging market contexts, where affiliated business groups are also prevalent.

Our study must be considered in light of its limitations. First, we use absolute and signed discretionary accruals as proxies for auditor

independence. While this is based on established precedence in the literature, we recognize that the noise in these measures could weaken our inferences. Second, because audit fees are not publicly available data in Taiwan, as in previous literature we rely on client sales in the same affiliated business group as indirect measures of audit fees. Doing so might introduce noise in our measures of client importance of affiliated business groups. Last, the public offering regulation mandated by the Taiwan Company Act was rescinded in December 2001. Since our sample period spans from 2000 to 2015, it contains approximately two years during the deregulated mandate. While we expect the effect is minimal, the 2-year deregulation may somewhat affect our inferences.

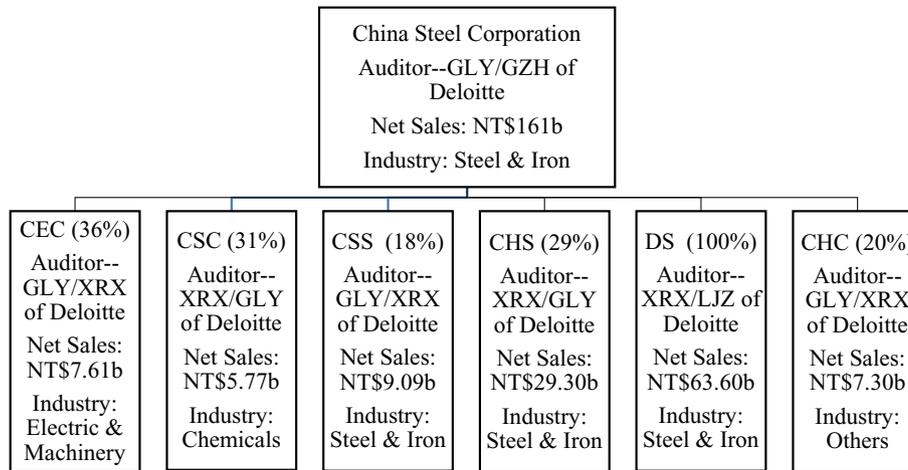


Fig. 1. Shareholdings, auditors, audit firms, and net sales of the Zhong gang group in 2015. Note: CEC is China Ecotek Corporation. CSC is China Steel Chemical. CSS is China Steel Structure Co. Ltd. CHS is Chung Hung Steel Corporation. DS is Dragon Steel. CHC is CHC Resources Corporation. The percentages in parentheses indicate the ownership percentages of subsidiaries hold by the parent company. For example, China Steel owns 36% of CEC. According to IFRS 10, a reporting entity is required to consolidate an investee when that entity controls the investee. An investor controls an investee when the investor is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. China Steel had effective control over CEC, CSC, CSS, CHS, and CHC in 2015 according to China Steel's 2015 consolidated financial statement. GJJ, CZH, ZGM, and GLY are partners in Taiwan member firm of Deloitte. GLY is Liyuan Guo. GZH is Zhenghong Guo. XRX is Ruixuan Xu. LJZ is Jizhen Li. To avoid double counting, all the sales are in unconsolidated format.

Appendix A. Appendix

We use the China Steel group to illustrate our calculation of DEP. Fig. 1 shows detailed information of China Steel Corporation and its six subsidiaries including CEC, CSC, CSS, CHS, DS, and CHC in 2015. DS was an unlisted company. The other six companies were listed in Taiwan Stock Exchange Corporation (TWSE). It is required in Taiwan that unlisted companies also have their financial statements audited and publicly disclosed and that two engagement audit partners from the same firm sign an audit report. The dual signature requirement creates complexities in measuring client importance because it is not disclosed which partner is responsible for maintaining the auditor-client relationship. Following Chen et al. (2008) and Chi et al. (2012), we separately calculate client importance measures for the two partners and then adopt the larger client importance measure between the two signing audit partners as the client importance at the audit partner level.

We measure client importance (DEP) as the natural logarithm of a client's sales divided by the sum of the natural logarithm of client sales from all clients of the audit partner, following the methodology in Reynolds and Francis (2000) and Chi et al. (2012). If a client is affiliated with a business group, we use the sum of natural logarithm of sales of all affiliated clients audited by the same auditor to replace the natural logarithm of client's sales. Moreover, we include all the listed and unlisted clients of the audit partners before exercising any data requirements when calculating the sum of natural logarithm of sales of clients.

For example, CEC was audited by GLY and XRX. GLY served as first auditor for ten clients in 2015 including the four affiliated clients (China Steel, CEC, CSS, and CHC). The sum of natural logarithm of sales of all the ten clients is 219.60. The sum of natural logarithm of sales of the four affiliated clients is 94.20. The natural logarithm of sales of CEC is 22.75. We compute the client importance measure of CEC as related with GLY as $94.20/219.60 = 42.90\%$. As comparison, using the traditional method in Reynolds and Francis (2000) and Chi et al. (2012), the client importance measure of CEC as related with GLY is computed as $22.75/219.60 = 10.36\%$.

Then we calculate the client importance measure of CEC for the second signing partner XRX. XRX served as second signing partner for five clients, including the three affiliated clients (CEC, CSS, and CHC). The sum of natural logarithm of sales of the five clients is 112.61. The sum of natural logarithm of sales of the three affiliated clients is 68.39. We

compute the client importance measure of CEC as related with XRX as $68.39/112.61 = 60.73\%$, while the measure is $22.75/112.61 = 20.20\%$ using the traditional method.

Then we adopt the larger client importance measure between the two signing audit partners as the client importance at the audit partner level. Therefore, our DEP measure of CEC is 60.73% as compared to 20.20% if traditional method is used.

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