Non-audit services and auditor independence in stable and unstable economic conditions

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Abstract
Purpose – The purpose of this study is to examine the association between non-audit service fees provided by the auditor and auditor independence in stable and unstable economic conditions. Further, this study investigates whether client importance impairs auditor independence in two different Australian economic environments.

Design/methodology/approach – This study focuses on financially distressed firms listed on the Australian Stock Exchange from 2005 to 2014. The data is obtained from SIRCA and the Morning Star databases. The probit method is used as a baseline regression model, the two-stage least squares and the sensitivity of control variable tests are used to control for any endogeneity and self-selection bias concerns.

Findings – This study shows that in stable economic conditions, non-audit service fees provided by auditors impair auditor independence. This suggests that economic bonding between auditor and client serves as a threat to the auditor’s independence, perhaps because of the importance given to the larger clients. In contrast, the authors find no association between non-audit service fees and auditor independence in unstable (highly regulated) economic conditions largely because of higher litigation risk. The results of this study are robust to alternative model specifications and endogeneity concerns.

Practical implications – This study provides an important implication to regulators that macro-economic conditions influence the strength of incentives related to non-audit services for auditors. Furthermore, this study enhances the understanding of regulators (Australian Security Investment Commission) and the strategies adopted by Australian auditors in response to economic incentives and market-based incentives.

Originality/value – The authors contribute to the existing literature by providing evidence that there is a tradeoff between market-based incentives (i.e. lower litigation costs) and economic incentives (i.e. non-audit services fees) with economic uncertainty influencing the importance of these incentives to auditors.

Keywords Auditor’s independence, Economic conditions, Global financial crisis, Non-audit services fee, Non-audit services

Paper type Research paper

1. Introduction
The external audit is considered a trust engendering practice that provides reassurance to stakeholders with financial interests in a particular company (Committee on the Financial Aspect of Code, 1992). However, high-profile accounting and auditing scandals such as Enron and WorldCom in the USA, HIH and OneTel in Australia (among others) have raised
concerns about the value and quality of the audit function. These accounting scandals demonstrate the importance of auditor independence related to services provided by auditors (Sikka, 2009).

To address concerns regarding auditor independence and non-audit services provided by the auditor, several countries announced policies to revive shareholders’ confidence. For example, in the USA, the Sarbanes Oxley Act (SOX) 2002 prohibits non-audit services provided by accounting and auditing firms [1]. As a result, the proportion of non-audit fees in total fees reduced substantially after SOX 2002 relative to before SOX 2002 (Chu and Hsu, 2018; Krishnan and Yu, 2011 and Whisenant et al., 2003) [2]. Similarly, the Australian Ministry of Financial Services also introduced the Corporate Law Economic Reform Program (CLERP) 9 reforms in 2004. However, contrary to SOX 2002, CLERP 9 does not prohibit any services provided by the auditor but allows for the provision of non-audit services as long as it does not endanger auditor independence. Nevertheless, adequate safeguards must be implemented to limit the threat to auditor independence (APES110, Para 290.156–290.216). Moreover, concerns related to auditor independence and non-audit services heightened after Global Financial Crisis (GFC) when some companies did not receive a going concern opinion (GCO) [3] on their financial statements immediately before filing for bankruptcy. For example, in the USA, Citigroup and Lehman Brothers received an unqualified opinion immediately before filing for bankruptcy (Sikka, 2009).

Extant literature suggests that non-audit services create economic bonding between auditors and clients which potentially results in auditors being more likely to form unqualified opinions on financial reports of distressed clients (Simunic, 1984; Wines, 1994; Sharma and Sidhu, 2001; Ettredge et al., 2017). To the extent that non-audit services impair auditors’ independence, we investigate whether stable or unstable economic conditions influence the association between an auditor’s independence and non-audit services fees [4]. Prior literature suggests that under unstable economic conditions, auditors are more independent (Antle et al., 1997; Defond and Subramanyam, 2002; Xu et al., 2011; Carson et al., 2019), perhaps because of higher litigation costs. In Australia, Carson et al. (2019) find that the Australian Securities and Investment Commission (ASIC) also increased audit inspections during unstable economic conditions, which in turn resulted in auditors becoming more conservative for a given level of client risk. Thus, it is important to understand the relationship between auditor-provided non-audit services and an auditor’s independence during stable and unstable economic environments in Australia [5].

Research to date is not consistent regarding the relationship between non-audit services and auditor independence/audit quality. In the USA, Koh et al. (2013) show that non-audit service fees provided by auditors improve earnings quality because of knowledge gains when auditors complete both an audit and consulting services. Bell et al. (2015) find a positive (negative) relationship between non-audit fees and audit quality for Securities and Exchange Commission registrants (private firms). Alternatively, in the UK, Wu et al. (2016) find no significant relationship between non-audit service fees and the likelihood of receiving a GCO. In Australia, Singh et al. (2019) find a negative relationship between non-audit service fees and the issuance of GCOs for financially distressed listed firms when audit partner tenure is short. Similarly, Kent et al. (2017) show a negative association between non-audit services fees and GCO at the partner, office and firm-level for financially distressed firms.

Prior research indicates that auditor independence is influenced by periods of economic uncertainty. For example, Fargher and Jiang (2008) find that following the crisis period of 2000–2002, auditors became more conservative and progressively issued GCOs for financially distressed firms because of litigation risk. Prior research supports that non-audit
services are positively associated with the likelihood that financial restatements result in litigation of the auditor (Schmidt, 2012). We argue that changes in economic condition are likely to affect the level of independence when auditors provide non-audit services to their clients.

Our sample consists of financially distressed Australian firms from 2005 to 2014. We examine the association between non-audit service fees provided by the auditor and auditor independence under stable and unstable economic conditions. Following prior studies, we use the propensity to issue a GCO as a proxy for auditor independence. To assess auditor independence and its association with economic conditions, we examine three subsamples: the pre-GFC period from 2005 to 2007, the mid-GFC period for 2008 and 2009 and the post-GFC period from 2010 to 2014.

Our results indicate that during stable economic conditions as proxied by the pre-GFC period from 2005 to 2007, auditors providing non-audit services are less likely to form a GCO for financially distressed firms. Alternatively, during times of economic instability (mid-GFC period from 2008 to 2009 and post-GFC period from 2010 to 2014), the proportion of non-audit services for financially distressed firms is not significantly associated with the likelihood of auditors issuing a GCO. According to Fargher and Jiang (2008) and Crockett and Ali (2015), auditors report more conservatively in an unstable economic environment to maximize (minimize) their market reputations (litigation costs). This implies that the litigation risk during unstable economic conditions influences the auditor/client relationship and creates a shift towards greater independence.

Our findings also indicate that auditor independence is impaired when the client is more important in terms of non-audit service revenue earned from clients during stable economic conditions. Consistent with the economic theory of auditor independence [6], this suggests that client importance (i.e. the fees received by the auditor divided by the sum of the non-audit fees from all clients) creates incentives for auditors and is inversely associated with auditor independence. Alternatively, under unstable economic conditions, we find no association between client importance and the proportion of non-audit fees. Our results are robust to alternate proxies of auditor independence and endogeneity concerns.

We contribute to the existing literature in the following ways. First, our findings identify that stable and unstable economic conditions influence the independence of auditors providing non-audit service fees. Prior studies have examined economic uncertainty and its influence on the probabilities of forming GCOs (Carey et al., 2011; Xu et al., 2011; Carson et al., 2019). However, they have not examined the level of economic uncertainty and related consequences to an auditor’s independence when providing non-audit services for financially distressed firms [7].

Second, we demonstrate that providing non-audit services for economically important clients reduces auditor independence during stable economic conditions for financially distressed firms. Auditing literature has previously linked client importance with auditor independence (Cahan et al., 2008). We demonstrate that client importance impairs auditor independence to a greater extent when stable economic conditions exist compared to unstable economic conditions.

Third, we contribute to the debate surrounding auditors and whether providing non-audit services is likely to impair or improve auditor independence. Our findings support and extend prior auditing research and demonstrate that economic conditions are an important factor related to auditor independence. Future auditing research must account for economic conditions when examining auditor independence to appropriately examine auditor independence and its influence on the quality of financial reporting.
Finally, consistent with Fargher and Jiang (2008), our results imply that market-based incentives such as lower litigation costs become more important to auditors during unstable economic conditions compared to economic incentives for non-audit service fees. Tradeoffs exist between market-based incentives (i.e., lower litigation costs) and economic incentives (i.e., non-audit services fees) with economic uncertainty influencing the importance of these incentives to auditors.

The remainder of this study is structured as follows. In Section 2, we provide the institutional framework. The theoretical framework and hypotheses are developed in Section 3. The sample selection procedure and research design are described in Section 4. The results are presented and discussed in Section 5. The final Section 6 draws conclusions, limitations and future research contributions.

2. Institutional framework
High-profile accounting scandals from 2000 to 2002 resulted in stricter regulations for auditors providing non-audit services worldwide. Reforms implemented in the USA based on the SOX of 2002 prohibit auditors from providing non-audit services for their clients (DeFond and Francis, 2005). These non-audit services include but are not limited to preparing accounting records, financial statements, internal audit services, management responsibilities, valuation services, information technology systems services, litigation support services, legal services, recruiting services and corporate finance services.

Canada and the European Union (EU) followed a similar strategy to the USA. According to the Institute of Chartered Accountants of Ontario Rules (204), auditors are prohibited from providing non-audit services to Canadian listed firms with a market value of more than $10m under specific conditions [8]. In the EU, according to Article 22 of the European Commission 2006, an audit firm must not perform an audit if the incumbent auditor’s independence is compromised as a result of providing non-audit services (EU, 2006).

Audit reforms were also implemented in Australia by the Australian Ministry of Financial Services, under the CLERP 9 in 2004. These audit reforms were based on recommendations made by the Ramsay (2001) Report (Ramsay, 2001, Report). Dissimilar to SOX 2002, CLERP 9 does not prohibit [9] auditors from providing non-audit services to their clients (Ramsay, 2001, report, pp. 55–69). However, Recommendation 7 of CLERP 9 required that auditors providing non-audit services for Australian companies disclose their fees in the company’s annual report.

Australia has also established the Accounting Professional and Auditing Standard Board (APESB) intending to set a professional accounting code of ethics. According to APESB 110 (Para 290.156), auditors providing non-audit services may pose a threat to the auditor’s independence, that is, self-review, self-interest and advocacy threats. However, APESB 110 (Para 290.156–216) also provides necessary safeguards that must be taken to reduce the threat of an auditor’s independence to an acceptable level. Importantly, non-audit services shall not be provided under APES110 (Para 290.158) for circumstances where there are no safeguards in place between the auditor and client.

3. Theory, literature review and hypotheses development
Agency theory suggests that there is a conflict of interest between principal and agent because of asymmetric information (Jensen and Meckling, 1976). An independent expert such as an auditor plays an integral role in the principal–agent relationship, forming an opinion [10] on a firm’s periodic financial statements to reduce agency conflict (Goldman and Barlev, 1974; Chow, 1982). An auditor does not necessarily eliminate agency conflict (Goldman and Barlev, 1974), making it important to ensure auditors’ independence in
performing the audit function. Greater auditor independence improves financial reporting quality and provides users with financial statements that are more representative of the intrinsic performance of the company.

Auditing research has suggested conflicting views as to whether non-audit services reduce the independence of the auditor. Providing non-audit services can create economic bonding between an auditor and client, although auditor independence is not necessarily impaired when incumbent auditors provide non-audit services (Beck et al., 1988; Singh et al., 2019; Lai, 2022). Furthermore, Lim and Tan (2008) and Koh et al. (2013) found that non-audit services provided by auditors increase audit independence and improve reporting quality through knowledge spillover between the auditor and client.

Basioudis et al. (2008) argue that if non-audit services help clients to attract potential investors, then incumbent auditors are more likely to form an opinion that is favorable for the client to forge a long-term relationship. They also argue that a high level of non-audit fees deters the auditor from forming GCOs for financially distressed firms. Similarly, other longitudinal studies suggest that the magnitude of non-audit fees impairs auditor independence (Sharma and Sidhu, 2001; Vanstraelen, 2002; Geiger and Blay, 2011; Sakel, 2013). Along with magnitude, a recent study reveals that various forms of non-audit services (such as tax services, HR consulting and financial information system consulting) are negatively associated with auditor independence (Meuwissen and Quick, 2019). Similar to the various form and magnitude of non-audit fees, client importance is an important factor to measure the auditor’s independence (Chung and Kallapur, 2003; Cahan et al., 2008). Auditors may be willing to compromise their independence by giving importance to their client, particularly if their client purchases a significant number of non-audit services (Garcia-Blandon et al., 2020). To generate high revenue incentives, auditors are more likely to give more importance to large-profile clients than smaller clients (Hardies et al., 2016). This is consistent with DeAngelo’s (1981) view that economic bonding creates opportunistic behavior by auditors with revenue incentives reducing the independence of auditors. This is likely to occur in an environment of low litigation risk, poorer investor protection and weaker corporate governance (Garcia-Blandon et al., 2020).

Dynamic incentives exist for auditors providing non-audit services, and potentially, this explains the inconsistent findings surrounding non-audit services and auditor independence. Lucrative revenues generated through non-audit services can entice an auditor to accommodate a client’s interest (Defond and Subramanyam, 2002). Additionally, financial dependence on clients through revenues from non-audit services can encourage auditors to provide favorable outcomes (Lai and Krishnan, 2009; Habib, 2012). However, while non-audit service revenues reduce auditor independence, other positive influences of non-audit services likely increase auditor independence.

For example, clients that require non-audit services can begin to rely on their auditor’s advisory services, increasing client dependence on the auditor and reducing their reluctance to change auditors. Auditors advance their knowledge of a client’s business when providing non-audit services, and research indicates this can increase the probability of identifying material misstatements and improve audit quality (Beck et al., 1988; Wu, 2006; Krishnan and Yu, 2011; Knechel et al., 2012). Greater reliance on an auditor’s expertise increases independence because it reduces the threat of auditors being replaced (DeAngelo, 1981).

Auditor objectivity is a continually critical component of the audit function, with impairments in objectivity creating adverse consequences for the auditor and client (Bonner et al., 1998). Reputation loss and litigation costs are important market-based incentives that assure the independence and objectivity of auditors. Prior research also indicates that auditors experience higher litigation risk during unstable economic periods,
and this increases audit efforts to minimize the probability of subsequent litigation loss (Seetharaman et al., 2002). Another piece of evidence suggests that during and after an unstable period, auditors are likely to charge more audit fees compared to non-audit fees (Alexeyeva and Svanström, 2015). This implies that the demand for non-audit services declined in an unstable economic period.

Given that economic uncertainty can influence the objective nature of auditors, we expect that the level of economic instability is likely to influence the association between the proportion of non-audit services and the independence of the auditor. Recent empirical studies (Carson et al., 2019; Ettredge et al., 2017) on auditor behaviors in different macroeconomic conditions find that auditors act more independently during the period of the financial crisis in comparison to pre-crisis conditions. Ettredge et al. (2017) argue that as an auditor’s experience of recession increases, this also increases independence with respect to the client.

It seems likely that economic conditions, particularly extreme economic changes, can change the risk perceptions of auditors. We suggest that incentives to protect non-audit service revenues are elevated when stable conditions exist and, as such, reduce an auditor’s independence. Research also indicates that the proportion of non-audit services to total audit fees is increasing over time, and this further strengthens incentives to protect these revenues. Given these factors, we expect that an auditor’s objectivity is diminished during stable economic periods, and this increases the likelihood that auditors report unqualified audit opinions for financially distressed firms (Griffin and Lont, 2010; Sakel, 2013; Lennox and Li, 2014; Ettredge et al., 2017). This leads to our H1:

**H1.** During stable economic conditions (before Global Financial Crisis), the proportion of non-audit fees is negatively associated with auditors forming going concern opinions for financially distressed companies.

Unstable economic environments tend to increase regulatory surveillance, increasing the prevalence of auditors forming modified audit opinions for financially distressed entities (Geiger and Ramu., 2006; Carey et al., 2011; Xu et al., 2011; Ettredge et al., 2017). Carson et al. (2019) find that auditors experience higher inspection risk during unstable economic conditions because of greater regulatory scrutiny. Other studies suggest that auditors report more conservatively during unstable economic conditions to maximize (minimize) their market reputation and reduce litigation costs (Fargher and Jiang, 2008; Crockett and Ali, 2015).

Prior literature contends that auditor behavior changes during and post-crisis periods because of higher regulatory surveillance, higher litigation risk and greater chances of reputational damage (Carey et al., 2011; Xu et al., 2011). Crockett and Ali (2015) argue that reputational damage because of lawsuits, audit regulations and market supervision leads to the fact that the auditor may face market-based incentives stemming from economic bonding with clients. They conclude that because of such high litigation costs, accounting firms are most likely to avoid violating their independence. Similarly, Seetharaman et al. (2002) find that above-average litigation risk encourages auditors to maximize audit efforts to minimize the probability of subsequent litigation loss.

Fargher and Jiang (2008) highlight that to minimize the government interventions and litigation costs, auditors are more likely to make a more conservative judgement in the first year of crisis than in the following years. Certified Public Accountant (CPA), Australia (2017) reveals that under unstable economic conditions, the proportion of forming GCO to financially distressed firms is relatively higher in post-GFC period than in the pre-GFC period. Carson et al. (2019) and the Certified Public Accountant (CPA), Australia (2017)
report show a significant increase in auditors forming GCOs during and post-GFC period is because of the high regulatory scrutiny.

Auditors are more likely to protect themselves from reputational and litigation losses by adopting a more conservative approach under unstable economic conditions. Therefore, we suggest that auditors providing non-audit services display greater independence, and thus, non-audit services do not impair auditor independence during crisis and post-crisis periods. Therefore, we propose \( H2 \) as follows:

\( H2 \). During unstable economic conditions (mid- and post-GFC period), the proportion of non-audit fees is not associated with going concern opinions for financially distressed companies.

4. Methodology

4.1 Sample

Our sample consists of Australian listed companies from the year 2005 to 2014. We used the SIRCA database to obtain audit information for the Australian Stock Exchange listed firms. The initial sample consists of 10,133 firm-year observations. We then obtained financial data for all firms from the MorningStar database and merged it with the existing SIRCA audit database, which resulted in a sample of 7,212 firm-year observations. In line with the objectives of our study, we limit our sample to financially distressed firms (i.e. firms with negative operating income) [15]. Thus, we excluded an additional 3,815 observations classified as non-distress companies, providing us with a sample of 3,397 firm-year observations. Following Xu et al. (2011) and Carson et al. (2019), we winsorized all continuous variables using the Z-standard score (−3, 3 Standard Deviation) and eliminate firm-year data with outliers to increase the consistency of our results. This results in an additional 88 observations being removed from our sample. Our final sample comprises 3,309 unbalanced firm-year observations (unbalanced) from 2005 to 2014.

To test \( H1 \) and \( H2 \), we divide our sample period into two subsamples [16]. The first subsample (P1) represents companies in a stable economic condition (PRIOR) in the Australian market from 2005 to 2007 (1,055 firm-year observations). The second subsample (P2) proxies for unstable economic conditions and includes the GFC period from 2008 to 2009 (724 firm-year observations) and the post-GFC period from 2010 to 2014 (1,530 firm-year observations).

Table 1 shows the frequency of audit opinions received by financially distressed firms under stable and unstable economic conditions. The issuance of GCO is approximately 20, 24 and 34% for the stable, crisis and post-crisis periods, respectively. These percentages of GCOs are consistent with arguments presented by Xu et al. (2011) and Carson et al. (2019) that auditors are more likely to issue a GCO to financially distressed firms under unstable economic conditions than in stable economic environments.

4.2 Model

We use a probit regression model to examine the association between auditor independence and non-audit services fees in economic uncertainty. Pooled cross-sectional regressions are completed to account for a non-normal distribution, and we cluster standard errors at the company level (Sakel, 2013; Ettredge et al., 2017). The primary regression is used to examine subsamples for stable and unstable economic conditions and associations between audit independence and non-audit services. Equation (1) is our primary regression and is as follows:
Consistent with prior literature, the likelihood of auditors issuing a GCO is used as a proxy for auditor independence (Fargher and Jiang, 2008; Xu et al., 2011; Carson et al., 2019). The GCO is coded 1 for firms that receive a GCO and 0 otherwise. The explanatory variable of interest is PROP. Consistent with Sharma and Sidhu (2001), PROP is the proportion of non-audit fees to total audit fees (non-audit fees plus audit fees).

Xu et al. (2011) report that financially distressed firms are more likely to experience liquidity shortages, resulting in a higher likelihood of receiving a GCO from the auditor. Thus, we include two independent variables to control for the liquidity, namely, the ratio of current assets to current liabilities (CURRENT) and working capital (WCAP). We expect a negative relationship between liquidity variables (WCAP and CURRENT) and GCO.

Companies with financial concerns generally provide favorable credit terms to increase sales, lengthening collection in days receivable. Therefore, consistent with Xu et al. (2011), accounts receivable to total assets ratio (DEBTORS) is included as a control variable, and we expect a positive association with GCO. Consistent with Carey et al. (2008) and Robinson (2008), we include ZMIJ to control for the probability of bankruptcy. Higher values of ZMIJ indicate a greater probability of bankruptcy; thus, we expect a positive association between ZMIJ and GCO.

We control for operating cash flow (OCF) in our model because of increased uncertainty related to bankruptcy risk. The OCF is calculated as operating cash flow divided by total assets (Geiger and Blay, 2011). Reynolds and Francis (2001) find that the current year’s GCO is positively associated with the previous year’s GCO. Therefore, we control for companies with a GCO for the previous year (XGCO) and expect a positive association between XGCO and GCO.

Xu et al. (2011) find that big-four (BIG4) auditing firms are more likely to issue GCOs under unstable economic environments compared to non-BIG4 audit firms. Clarkson et al. (2003) argue that protecting their reputational capital incentivizes the big-four auditors’ to minimize litigation risk. Based on this evidence, we expect a positive relation between BIG4 and issuances of GCOs. For a definition of the variables examined in our study, please refer to the Appendix.

Table 1.
Frequency of going concern opinion on financially distressed firms during stable and unstable economic environments from 2005 to 2014

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<tr>
<td></td>
<td>No. (%)</td>
<td>PRIOR</td>
<td>GFC</td>
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<tr>
<td>GCO</td>
<td>894 (27.00)</td>
<td>206 (19.55)</td>
<td>175 (24.20)</td>
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<tr>
<td>Other</td>
<td>99 (3.00)</td>
<td>33 (3.15)</td>
<td>30 (4.15)</td>
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<tr>
<td>Unqualified</td>
<td>2,316 (69.99)</td>
<td>816 (77.35)</td>
<td>519 (71.70)</td>
</tr>
<tr>
<td>Financially distressed firms</td>
<td>3,309 (100.00)</td>
<td>1,055 (100.00)</td>
<td>724 (100.00)</td>
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</table>

Notes: GCO = going concern opinion; Other = other matter(s) paragraph; Unqualified = unqualified opinion without emphasis of matter(s) paragraph; Financially distressed firms = firms with negative operating profit
According to Carson et al. (2019), the ASIC has maximized the inspections of audit reports since 2012. This potentially influences the risk perceptions of auditors when evaluating the financial statements of financially distressed firms and increases the likelihood of issuing a GCO. Therefore, we examine the TONE variable in equation (2) below to measure the behaviors of auditors for the period between 2012 and 2014. We expect a positive relationship between TONE and GCO. Equation (2) is as follows:

$$GCO_{it} = \beta_0 + \beta_1PROP_{it} + \beta_2ZMIJ_{it} + \beta_3OCF_{it} + \beta_4WCAP_{it} + \beta_5DEBTORS_{it}$$
$$+ \beta_6CURRENT_{it} + \beta_7BIG4_{it} + \beta_8XGCO_{it} + \beta_9TONE_{it} + \epsilon_{it}$$

5. Results
5.1 Descriptive statistics
Table 2 reports descriptive statistics (univariate analysis) for financially distressed firms from 2005 to 2014 and subsamples for 2005–2007 (PRIOR), 2008–2009 (GFC) and 2010–2014 (AFTER). Mean and median statistics are reported based on the partitioning of whether companies receive a GCO or non-GCO opinion. We also report t-statistics in Table 2 to compare financial variables of GCO and non-GCO firms and their levels of non-audit services.

Table 2 reports that the proportion of non-audit fees to total audit fees (PROP) is consistently higher for non-GCO firms based on our full sample (FULL) and subsamples for PRIOR and AFTER, significant at the 1% level. Companies receiving GCOs report significantly lower means (median) for operating cash flow (OCF), working capital (WCAP) and current ratio (CURRENT) at the 1% level, compared to firms with unqualified audit opinions. As expected, firms receiving GCOs are more likely to report liquidity problems.

GCO firms in Table 2 tend to report a higher proportion of debtors to total assets (DEBTOR). GCO firms for FULL, PRIOR, GFC and AFTER report means of 0.117, 0.116, 0.112 and 0.119, respectively, for DEBTOR. There are significantly higher proportions (p < 0.01) of DEBTOR for GCO firms, indicating that GCOs have greater difficulty collecting receivables and increased cash flow concerns. The probability of bankruptcy (ZMIJ) is significantly higher (p < 0.01) for GCO firms, reporting means of 11.620, 3.272, 7.509 and 16.347, respectively, for the FULL, PRIOR, GFC and AFTER samples.

Finally, the mean value for Big 4 companies (BIG4) is significantly lower (p < 0.01) for firms receiving GCOs compared to firms receiving unqualified opinions. Results indicate firms receiving GCOs are more likely to be evaluated by a smaller or non-Big4 audit firm. These results are relatively similar under stable (PRIOR) and unstable economic conditions (GFC and AFTER).

5.2 Correlation analysis
Table 3 reports the Pearson correlation matrix for the variables in our study. Consistent with H1, we find that PROP is negatively associated with GCO at r = −0.130. The highest correlation with our dependent variable GCO is companies receiving GCOs for the prior year (XGCO) with a positive and significant correlation of 0.516. Independent variables report correlations with GCOs as expected with a probability of bankruptcy (ZMIJ) and account receivable to total assets (DEBTORS) positively correlated with GCOs at 0.120 and 0.140, respectively. Working capital (WCAP) reports a strongly negative correlation with GCO at −0.397, significant at the 5% level. Moreover, big 4 (BIG4) audit firms, operating cash
Table 2. Descriptive statistics for subsamples in stable and unstable economic conditions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Stable and unstable condition</th>
<th>Stable economic conditions</th>
<th></th>
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<th>Mean difference</th>
<th>t-statistic</th>
<th>Mean difference</th>
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<td></td>
<td>GCO = 0</td>
<td>GCO = 1</td>
<td>Mean (Median)</td>
<td>Mean (Median)</td>
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<tr>
<td>PROP</td>
<td>0.175 (0.116)</td>
<td>0.122 (0.028)</td>
<td>7.086***</td>
<td>0.207 (0.141)</td>
<td>0.137 (0.053)</td>
<td>4.277***</td>
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<td>ZMJ</td>
<td>−0.762 (−2.316)</td>
<td>11.620 (0.043)</td>
<td>−6.970***</td>
<td>0.806 (2.179)</td>
<td>3.272 (0.481)</td>
<td>−5.624***</td>
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<td>OCF</td>
<td>1.053 (0.000)</td>
<td>0.670 (0.000)</td>
<td>3.557***</td>
<td>0.800 (0.000)</td>
<td>0.393 (0.000)</td>
<td>2.660***</td>
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<tr>
<td>WCAP</td>
<td>6.011 (6.719)</td>
<td>3.448 (5.284)</td>
<td>25.580***</td>
<td>5.689 (6.495)</td>
<td>3.713 (5.611)</td>
<td>9.958***</td>
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<tr>
<td>DEBTORS</td>
<td>0.075 (0.028)</td>
<td>0.117 (0.047)</td>
<td>−8.316***</td>
<td>0.079 (0.271)</td>
<td>0.116 (0.054)</td>
<td>−3.619***</td>
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<tr>
<td>CURRENT</td>
<td>10.723 (4.586)</td>
<td>3.410 (1.178)</td>
<td>9.378***</td>
<td>10.903 (4.386)</td>
<td>4.124 (1.241)</td>
<td>3.519***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIG4</td>
<td>0.458 (0.000)</td>
<td>0.343 (0.000)</td>
<td>5.969***</td>
<td>0.467 (0.000)</td>
<td>0.339 (0.000)</td>
<td>3.327***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XGCO</td>
<td>0.126 (0.000)</td>
<td>0.640 (1.000)</td>
<td>−34.720***</td>
<td>0.151 (1.000)</td>
<td>0.329 (1.000)</td>
<td>−12.430***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TONE</td>
<td>0.222 (0.000)</td>
<td>0.386 (0.000)</td>
<td>−9.591***</td>
<td>0.467 (0.000)</td>
<td>0.339 (0.000)</td>
<td>3.327***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GFC</td>
<td>0.227 (0.000)</td>
<td>0.195 (0.000)</td>
<td>2.007***</td>
<td>0.467 (0.000)</td>
<td>0.339 (0.000)</td>
<td>3.327***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFTER</td>
<td>0.420 (0.000)</td>
<td>0.375 (1.000)</td>
<td>−8.008***</td>
<td>0.467 (0.000)</td>
<td>0.339 (0.000)</td>
<td>3.327***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ***p < 0.01; **p < 0.05; and *p < 0.10. Variable definitions: GCO = 1 for financially distressed firms that receive a going concern opinion, 0 otherwise; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital is current assets minus current liabilities at financial year end; DEBTORS = account receivables to total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; BIG4 = 1 for Big four auditing firm, 0 otherwise; XGCO = 1 for companies receiving a GCO in the prior year, 0 otherwise; and TONE = 1 for firms reporting during the period of 2012–2014, 0 otherwise.
### Table 2.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (Median) GCO = 0</th>
<th>Mean (Median) GCO = 1</th>
<th>Mean Difference GCO = 0</th>
<th>Mean (Median) GCO = 1</th>
<th>t-statistic</th>
<th>Mean Difference GCO = 0</th>
<th>Mean (Median) GCO = 1</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROP</td>
<td>0.157 (0.076)</td>
<td>0.128 (0.027)</td>
<td>1.852</td>
<td>0.159 (0.086)</td>
<td></td>
<td>0.114 (0.005)</td>
<td>4.553***</td>
<td></td>
</tr>
<tr>
<td>ZMIJ</td>
<td>0.139 (2.256)</td>
<td>7.509 (0.353)</td>
<td>-4.371***</td>
<td>1.062 (2.477)</td>
<td></td>
<td>16.347 (0.167)</td>
<td>-4.974***</td>
<td></td>
</tr>
<tr>
<td>OCF</td>
<td>1.088 (0.000)</td>
<td>0.531 (0.000)</td>
<td>2.779***</td>
<td>1.240 (0.000)</td>
<td></td>
<td>0.828 (0.000)</td>
<td>3.063***</td>
<td></td>
</tr>
<tr>
<td>WCAP</td>
<td>5.975 (6.714)</td>
<td>3.673 (5.513)</td>
<td>10.398***</td>
<td>6.311 (6.895)</td>
<td></td>
<td>3.267 (4.848)</td>
<td>22.018***</td>
<td></td>
</tr>
<tr>
<td>DEBTORS</td>
<td>0.074 (0.028)</td>
<td>0.112 (0.053)</td>
<td>-3.367***</td>
<td>0.072 (0.029)</td>
<td></td>
<td>0.119 (0.043)</td>
<td>-6.797***</td>
<td></td>
</tr>
<tr>
<td>CURRENT</td>
<td>11.292 (5.087)</td>
<td>3.562 (1.240)</td>
<td>5.938***</td>
<td>10.274 (5.040)</td>
<td></td>
<td>3.071 (1.087)</td>
<td>7.328***</td>
<td></td>
</tr>
<tr>
<td>BIG4</td>
<td>0.420 (0.000)</td>
<td>0.297 (0.000)</td>
<td>2.931***</td>
<td>0.418 (0.000)</td>
<td></td>
<td>0.360 (0.000)</td>
<td>4.159***</td>
<td></td>
</tr>
<tr>
<td>XGCO</td>
<td>0.105 (0.000)</td>
<td>0.622 (1.000)</td>
<td>-16.602***</td>
<td>0.116 (0.000)</td>
<td></td>
<td>0.690 (1.000)</td>
<td>-28.316***</td>
<td></td>
</tr>
<tr>
<td>TONE</td>
<td>0.529 (1.000)</td>
<td>0.672 (1.000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-5.397***</td>
<td></td>
</tr>
</tbody>
</table>

2008–2009 (P2: GFC)  
2010–2014 (P3: AFTER)  

Non-audit services and auditor independence.
### Table 3. Pearson correlation matrix and variance inflation factor for financially distressed Australian listed companies from 2005 to 2014

<table>
<thead>
<tr>
<th>Variables</th>
<th>GCO</th>
<th>PROP</th>
<th>ZMIJ</th>
<th>OCF</th>
<th>WCAP</th>
<th>DEBTORS</th>
<th>CURRENT</th>
<th>BIG4</th>
<th>XGCO</th>
<th>TONE</th>
<th>GFC</th>
<th>AFTER</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCO</td>
<td>1</td>
<td>-0.130</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.08</td>
</tr>
<tr>
<td>PROP</td>
<td>-0.130</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.05</td>
</tr>
<tr>
<td>ZMIJ</td>
<td>0.120</td>
<td>-0.037</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.07</td>
</tr>
<tr>
<td>OCF</td>
<td>-0.085</td>
<td>0.082</td>
<td>-0.029</td>
<td>1</td>
<td>-0.006</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.19</td>
</tr>
<tr>
<td>WCAP</td>
<td>-0.397</td>
<td>0.061</td>
<td>-0.160</td>
<td>-0.006</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>1.06</td>
</tr>
<tr>
<td>DEBTORS</td>
<td>0.140</td>
<td>-0.020</td>
<td>0.108</td>
<td>0.120</td>
<td>-0.132</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.08</td>
</tr>
<tr>
<td>CURRENT</td>
<td>-0.157</td>
<td>-0.023</td>
<td>-0.042</td>
<td>-0.080</td>
<td>0.233</td>
<td>-0.126</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.11</td>
</tr>
<tr>
<td>BIG4</td>
<td>-0.111</td>
<td>0.231</td>
<td>-0.053</td>
<td>0.176</td>
<td>0.081</td>
<td>0.007</td>
<td>-0.060</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.16</td>
</tr>
<tr>
<td>XGCO</td>
<td>0.516</td>
<td>-0.105</td>
<td>0.129</td>
<td>-0.109</td>
<td>-0.300</td>
<td>0.116</td>
<td>-0.094</td>
<td>-0.128</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1.75</td>
</tr>
<tr>
<td>TONE</td>
<td>0.167</td>
<td>-0.051</td>
<td>0.052</td>
<td>0.051</td>
<td>-0.048</td>
<td>0.033</td>
<td>-0.040</td>
<td>0.031</td>
<td>0.085</td>
<td>1</td>
<td></td>
<td></td>
<td>1.33</td>
</tr>
<tr>
<td>GFC</td>
<td>-0.035</td>
<td>-0.034</td>
<td>-0.010</td>
<td>0.001</td>
<td>0.013</td>
<td>-0.014</td>
<td>0.018</td>
<td>-0.040</td>
<td>-0.041</td>
<td>-0.320</td>
<td>1</td>
<td></td>
<td>2.09</td>
</tr>
<tr>
<td>AFTER</td>
<td>0.137</td>
<td>-0.066</td>
<td>0.044</td>
<td>0.063</td>
<td>-0.003</td>
<td>0.012</td>
<td>-0.041</td>
<td>0.018</td>
<td>0.092</td>
<td>0.651</td>
<td>-0.492</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Correlations in Italic is significant at $p < 0.05$. Variable definitions: GCO = 1 for financially distressed firms that receive a going concern opinion, 0 otherwise; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMIJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital is current assets minus current liabilities at financial year end; DEBTORS = accounts receivable divided by total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; BIG4 = 1 for Big four auditing firm, 0 otherwise; and XGCO = 1 for companies receiving a going concern opinion in prior year, 0 otherwise; GFC = if opinion formed from year 2008 to 2009 1, otherwise 0; and TONE = 1 for companies reporting from year 2010 to 2014, 0 otherwise.
flow (OCF) and the current ratio (CURRENT) are significantly negatively correlated with the issuance of a GCO, reporting correlations of −0.111, −0.085 and −0.157, respectively. Reporting period from 2012 to 2014 (TONE) is positively correlated with GCOs at 0.167. This is consistent from 2012 to 2014 reporting the highest proportion of GCOs compared to PRIOR and GFC. Pairwise correlations and VIF statistics are below correlations of 0.70 and VIF of 4.0 as suggested by Dormann et al. (2012).

5.3 Multivariate tests

Table 4 reports the multivariate results of whether auditor independence is impaired when non-audit services make up a greater proportion of total audit fees. Table 4 Panel 1 shows a significant and negative association (β = −0.890; p < 0.01) between PROP and GCO. This is consistent with prior studies and supports our H1 which suggests that under stable economic conditions, auditors are less likely to issue going-concern opinions to financially distressed clients. Our probit model for PRIOR and GCO reports an adjusted R² of 0.212 and is significant at the 1% level.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp. signs</th>
<th>Probit 1: PRIOR Coefficients (Z-statistic)</th>
<th>2SLS Coefficients (Z-statistic)</th>
<th>Probit 2: GFC and AFTER Coefficients (Z-statistic)</th>
<th>2SLS Coefficients (Z-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROP</td>
<td>−</td>
<td>−0.890*** (−3.512) −6.413*** (−5.085)</td>
<td>−0.279 (−1.426)</td>
<td>−3.575 (−1.033)</td>
<td></td>
</tr>
<tr>
<td>ZMIJ</td>
<td>+</td>
<td>0.010*** (2.045) −0.001 (−0.123)</td>
<td>0.001 (0.184)</td>
<td>0.001 (0.357)</td>
<td></td>
</tr>
<tr>
<td>OCF</td>
<td>−</td>
<td>−0.032 (−1.164) −0.027 (−0.949)</td>
<td>−0.059*** (−3.820)</td>
<td>−0.053*** (−3.445)</td>
<td></td>
</tr>
<tr>
<td>WCAP</td>
<td>−</td>
<td>−0.104*** (−5.580) −0.110*** (−5.768)</td>
<td>−0.133*** (−10.672)</td>
<td>−0.124*** (−9.574)</td>
<td></td>
</tr>
<tr>
<td>DEBTORS</td>
<td>+</td>
<td>0.589 (1.686) 0.288 (0.763)</td>
<td>0.535 (2.103)</td>
<td>0.510* (1.999)</td>
<td></td>
</tr>
<tr>
<td>CURRENT</td>
<td>−</td>
<td>−0.013*** (−2.987) −0.013*** (−2.927)</td>
<td>−0.020*** (−4.826)</td>
<td>−0.020*** (−4.974)</td>
<td></td>
</tr>
<tr>
<td>BIG4</td>
<td>+</td>
<td>−0.192* (−1.897) 0.175 (1.347)</td>
<td>−0.083 (−1.167)</td>
<td>0.149* (1.985)</td>
<td></td>
</tr>
<tr>
<td>XGCO</td>
<td>+</td>
<td>0.980*** (9.160) 0.901*** (8.549)</td>
<td>1.413*** (19.632)</td>
<td>1.334*** (17.341)</td>
<td></td>
</tr>
<tr>
<td>TONE</td>
<td>+</td>
<td>0.358*** (5.234) 0.333*** (4.655)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Constant −0.370*** (−2.926) 0.592*** (2.358) −0.273*** (−2.988) 0.102 (0.609)

Adjusted R² 0.212 0.227 0.360 0.363
Prob > chi² 0.000 0.000 0.000 0.000
LR χ² 221.00 236.62 715.67 1,008.47
Observations 1,055 1,055 2,254 2,254
df 8 8 9 9
Log likelihood −410.42 −402.61 −888.57 −884.97
Firm fixed effect Yes Yes Yes Yes

Notes: *p < 0.10, **p < 0.05 and ***p < 0.01. Variable definitions: PRIOR = financially distressed firms during the period of 2005–2007; GFC and AFTER = financially distressed firms reporting for the period from 2008 to 2014; GCO = 1 for financially distressed firms that receive a going concern opinion, 0 otherwise; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMIJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital is current assets minus current liabilities at financial year end; DEBTORS = accounts receivable divided by total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; BIG4 = 1 for Big four auditing firm, 0 otherwise; XGCO = 1 for companies with going concern opinion in prior year, 0 otherwise; and TONE = 1 for firms reporting during the period of 2012 to 2014, 0 otherwise.

Table 4. The result of probit model and two-stage least squares for stable and unstable economic conditions.
Independent variables in Table 4 report signs that are in alignment with prior research based on tests for the PRIOR period. ZMJ and XGCO are significantly positively related to GCOs, reporting coefficients of 0.010 ($p < 0.05$) and 0.980 ($p < 0.01$), respectively. WCAP and CURRENT are negatively associated with issuing GCOs and report coefficients of $-0.104$ ($p < 0.01$) and $-0.013$ ($p < 0.01$), respectively. BIG4 is negatively associated with issuing GCOs during stable economic conditions, reporting a negative coefficient of $-0.192$, significant at the 10% level.

Table 4 Panel 2 reports result from unstable economic conditions. The probit result shows no association between the proportion of non-audit fees to audit fees and the issuance of GCOs to financially distressed firms. This supports our $H2$. The probit model for unstable economic conditions in Table 4 is significant at the 1% level and reports an adjusted $R^2$ of 0.360. As expected, GCOs capture considerably more variation in our probit model for unstable economic conditions compared to stable economic conditions. To increase the significance of our results, we performed the simultaneous equation modelling to check whether the coefficients resulting from both models are significantly different from each other [18]. The chi-square value is 3.356 ($p < 0.05$) rejects the null hypothesis, suggesting that the coefficients of $PROP$ from both regressions are significantly different from each other.

Finally, we examine in Table 4 the high inspection period by ASIC from 2012 to 2014 (TONE) to assess whether this influences perceptions and the probability of auditors issuing GCOs. TONE reports a significantly positive coefficient of 0.358 ($p < 0.01$) for the GFC and AFTER period, indicating the highly regulated period by ASIC potentially influenced the issuance of GCOs for financially distressed firms by auditors.

Overall, our results suggest that economic uncertainty influences the independence of auditors. It seems likely that economic incentives for auditors providing non-audit services impair their independence during periods of low economic uncertainty.

Table 5 presents the results of auditor independence and the issuance of GCOs for the GFC and AFTER periods. This additional test is completed because Table 4 assumes that the GFC and AFTER periods are equal proxies for unstable economic conditions. Table 5 examines the association of $PROP$ with $GCO$ for $GFC$ and AFTER subsamples separately, rather than as a single subsample.

Table 5 results continue to support our initial findings, supporting $H2$ and identifying that auditor independence is not impaired during periods of economic uncertainty. For the GFC period, $PROP$ is not significantly associated with $GCO$ for the probit model ($\beta = -0.318$). This result is also consistent for the AFTER period and holds for the probit model ($\beta = -0.271$). The adjusted $R^2$ for the GFC probit model is 0.306 compared to an adjusted $R^2$ of 0.381 for the AFTER probit model. This supports statistics in Table 1 with auditors issuing GCOs at the highest percentage rate during the AFTER period.

We use client importance (CIMP) and log of non-audit fees (LNNAF) as alternative proxies for our main explanatory variable ($PROP$). Consistent with Chung and Kallapur (2003), the CIMP is measured as the amount of non-audit fees received by the auditor divided by the sum of the non-audit fees from all clients in a given year. In Table 6 Panel 1, CIMP reports a negative coefficient of $-0.024$ significant at the 5% level which shows that the client importance reduces auditor independence under stable economic conditions. Similarly, results in Table 6 Panel 3 show a negative association between LNNAF and GCO at a 1% significant level. This result is also consistent with our main result and supports $H1$, indicating that auditors receiving higher non-audit services fees are less likely to issue a GCO for financially distressed firms. Alternatively, results in Table 6 Panels 2 and 4 for CIMP and LNNAF during unstable economic conditions are not significantly associated with auditors issuing GCOs.
### Non-audit services and auditor independence

Panel 1: GFC

| Variables | Exp. signs | Probit Coefficients (Z-statistic) | 2SLS Coefficients (Z-statistic) | Panel 2: AFTER  
|-----------|------------|-----------------------------------|---------------------------------|------------------|
| PROP      | -          | -0.318 (–0.978)                  | -1.646 (–1.116)                 | -0.271 (–1.149)  
| ZMIJ      | +          | 0.003 (0.003)                    | -0.003 (–1.004)                 | 0.001 (0.075)    
| OCF       | -          | -0.061 (–2.290)                  | -0.056 (–1.822)                 | -0.061 (–3.404)  
| WCAP      | -          | -0.083*** (–3.544)               | -0.080*** (–3.390)              | -0.155*** (–9.494)  
| DEBTORS   | +          | 0.289 (0.628)                    | 0.261 (0.552)                   | 0.725** (2.183)   
| CURRENT   | -          | -0.032*** (–3.524)               | -0.033*** (–3.896)              | -0.015*** (–2.977)  
| BIG4      | +          | -0.215* (–1.720)                 | -0.141 (–0.864)                 | -0.031 (–0.352)   
| XGCO      | +          | 1.391*** (10.434)                | 1.390*** (10.511)               | 1.432*** (16.277)  
| TONE      | +          | 0.367*** (4.340)                 | 0.320*** (3.740)                | 0.320*** (3.740)   
| Constant  |            | -0.347** (–2.133)                | -0.190 (–0.743)                 | -0.243*** (–2.001)  
| Adjusted R² | 0.306         | 0.307                            | 0.381                          | 0.386           
| Prob > chi² | 0.000          | 0.000                            | 0.000                          | 0.000           
| LR χ²   | 182.97     | 245.48                           | 746.00                         | 754.47          
| Observations | 724            | 724                              | 1,530                          | 1,530           
| df      | 8           | 8                                | 9                              | 9               
| Log likelihood | -277.77         | -277.66                           | -604.97                        | -600.73         
| Firm fixed effect | Yes           | Yes                             | Yes                           | Yes            

**Notes:** *p < 0.10, **p < 0.05 and ***p < 0.01. Variable definitions: PRIOR = financially distressed firms during the period of 2005 to 2007; GFC = financially distressed firms during the period of 2008 to 2009; AFTER = financially distressed firms reporting for the period from 2010 to 2014; GCO = 1 for financially distressed firms that receive a going concern opinion, 0 otherwise; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMIJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital minus current liabilities at financial year end; DEBTORS = accounts receivable divided by total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; XGCO = 1 for companies with going concern opinion in prior year, 0 otherwise; TONE = 1 for firms reporting during the period of 2012 to 2014, 0 otherwise.

5.4 Robustness and sensitivity test

Prior research states that jointly determining audit and non-audit fees can induce biased estimates because of issues related to endogeneity (Defond and Francis, 2005; Griffin and Lont, 2010; Geiger and Blay, 2011; Sakel, 2013). To minimize the influence of endogeneity, we perform two-stage least squares (2SLS) as an addition to our probit model. Following Larcker and Rusticus (2010), we implement two steps to identify an appropriate IV (Bollen et al., 1995): (1) economic theory and (2) sensitivity analysis.

### Economic theory

According to the economic theory, supply and demand factors influence the acquisition of services, while the effect of such services provided could also be observed (Antle et al., 2006). The basic economic theory of demand and supply could link non-audit fees to financially distressed firms. Financial instability can cause firms to demand non-audit services because they require improved outsourcing services to manage financial health and avoid future bankruptcy. However, firms in distress have limited cash to invest in non-audit services, and consequently, large firms demand more non-audit services (Lee et al., 2009; Dobler, 2014). As large firms have more complex systems, face more complicated tax concerns, seek large sums of capital and engage in mergers and acquisitions, they require more non-audit services compared to small firms (Hay et al., 2006; Zaman et al., 2011).
Table 6.
Tests for log of non-audit fees and client importance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp. signs</th>
<th>Panel 1</th>
<th>Panel 2</th>
<th>Panel 3</th>
<th>Panel 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coefficients (Z-statistic)</td>
<td>Coefficients (Z-statistic)</td>
<td>Coefficients (Z-statistic)</td>
<td>Coefficients (Z-statistic)</td>
</tr>
<tr>
<td>CIMP</td>
<td>–</td>
<td>–0.024** (−2.033)</td>
<td>–0.180 (−0.299)</td>
<td>LnNAF</td>
<td>–0.032*** (−3.110)</td>
</tr>
<tr>
<td>ZMIJ</td>
<td>+</td>
<td>0.010** (2.228)</td>
<td>0.001 (0.131)</td>
<td></td>
<td>0.010** (2.182)</td>
</tr>
<tr>
<td>OCF</td>
<td>–</td>
<td>–0.035 (−1.271)</td>
<td>–0.058*** (−3.757)</td>
<td></td>
<td>–0.029 (−1.029)</td>
</tr>
<tr>
<td>WCAP</td>
<td>–</td>
<td>–0.104*** (−5.697)</td>
<td>–0.134*** (−10.747)</td>
<td></td>
<td>–0.104*** (−5.620)</td>
</tr>
<tr>
<td>DEBTORS</td>
<td>+</td>
<td>0.667* (1.852)</td>
<td>0.516** (2.021)</td>
<td></td>
<td>0.712* (1.948)</td>
</tr>
<tr>
<td>CURRENT</td>
<td>–</td>
<td>–0.012*** (−2.585)</td>
<td>–0.020*** (−4.809)</td>
<td></td>
<td>–0.013*** (−2.803)</td>
</tr>
<tr>
<td>BIG4</td>
<td>+</td>
<td>–0.168 (−1.145)</td>
<td>–0.049 (−1.130)</td>
<td></td>
<td>–0.185 (−1.386)</td>
</tr>
<tr>
<td>XGCO</td>
<td>+</td>
<td>0.984*** (9.375)</td>
<td>1.420*** (19.423)</td>
<td></td>
<td>0.997*** (9.444)</td>
</tr>
<tr>
<td>TONE</td>
<td>+</td>
<td>0.362*** (5.283)</td>
<td>0.227 (−0.256)</td>
<td></td>
<td>0.352*** (5.259)</td>
</tr>
<tr>
<td>Constant</td>
<td>–</td>
<td>–0.306* (−1.824)</td>
<td>–0.148 (−1.318)</td>
<td></td>
<td>–0.352*** (−2.656)</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.249</td>
<td>0.362</td>
<td>0.227</td>
<td>0.360</td>
<td></td>
</tr>
<tr>
<td>Prob &gt; chi$^2$</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>LR $\chi^2$</td>
<td>21.224</td>
<td>924.132</td>
<td>218.604</td>
<td>999.269</td>
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<td>1,055</td>
<td>2,254</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p < 0.10, **p < 0.05 and ***p < 0.01. Variable definitions: PRIOR = financially distressed firms during the period of 2005 to 2007; GFC and AFTER = financially distressed firms reporting for the period from 2008 to 2014; LnNAF = log of non-audit fees at financial year end; CIMP = amount of client fees received by auditor divided by sum of the non-audit fees from all clients of partner year; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMIJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital is current assets minus current liabilities at financial year end; DEBTORS = accounts receivable divided by total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; BIG4 = 1 for Big four auditing firm, 0 otherwise; XGCO = 1 for companies with going concern opinion in prior year, 0 otherwise; and TONE = 1 for firms reporting during the period of 2012 to 2014, 0 otherwise.
According to Larcker and Rusticus (2010), variables from outside the system could be a good instrument. As we see, in the present study, none of the equations (1 or 2) uses LTA as a control variable to define GCO. Therefore, we use $LTA$ (Log Total Assets) as an IV, and this is associated with $PROP$. However, to test the weakness of this IV, the sensitivity analysis is performed in the second step.

5.4.2 Sensitivity analysis. After selecting the IV, it is very important to test it before performing 2SLS. To test the IV, we perform two tests. Through the first test, we estimate the $F$-statistic and compare it with the critical values identified by Stock et al. (2002). Stock et al. (2002) suggest that $F$-statistic values of greater than 8.96 are appropriate when using a single IV. The $F$-values for our two main subsamples which proxy for stable (PRIOR) and unstable (GFC and AFTER) conditions are 43.93 for PRIOR and 56.46 for GFC and AFTER. These IV thresholds for $LTA$ far exceed the threshold of 8.96 and support using $LTA$ as an appropriate IV. In the second test, the explanatory power of IV through the first stage (2SLS) is used to examine the weakness of IV. As Larcker and Rusticus (2010) and Stock et al. (2002) argue that the insignificant $p$-values of IV at the first stage indicate the weakness of the instruments, the result of the first stage (untabulated for brevity) shows that IV is significantly associated with the endogenous variable, which indicates the strength of IV in the present study. Hence, we use $LTA$ as our IV endogeneity tests completed in our study [19].

The 2SLS results in Table 4 are qualitatively similar to the probit model with $PROP$ ($\beta = -6.413, p < 0.01$) is significantly negatively related to GCO in stable economic conditions. This fit concurs well with the existing studies and confirms that the proportion of non-audit fees exerts a negative impact on the probability of GCO. Alternatively, $PROP$ ($\beta = -3.575$) is insignificantly associated with auditors issuing GCOs in unstable economic conditions. Similarly, we used the 2SLS approach when we subdivided our unstable economic condition into two sub-samples, GFC and AFTER sample. The results reported in Table 5 for 2SLS are qualitatively similar to Table 5 probit regression results.

Following Geiger and Blay (2011), we use two more approaches to measure the sensitivity of our results, indicating that auditor independence is impaired during stable economic conditions. In the first approach, we remove all insignificant control variables from our main results in Table 4. More specifically, we exclude $ZMIJ$, $OCF$, $DEBTORS$ and $BIG4$ from our stable economic condition results and only $ZMIJ$ from our unstable economic condition results [20]. The results reported in Table 7 Panels 1 and 2 are qualitatively similar to Table 4 results after excluding insignificant control variables. The $PROP$ reports a negative and significant coefficient ($\beta = -6.285, p < 0.01$) which suggests that auditors are less likely to issue a GCO under stable economic conditions. Alternatively, $PROP$ is insignificant under unstable economic conditions.

In the second approach, we eliminated a common singular control variable ($WCA$) that is significant for both the probit and 2SLS models in Table 4. The results reported in Table 7 Panels 3 and 4 show that the removal of a significant control variable does not qualitatively affect the main results presented in Table 4.

Frankel et al. (2002) use the association between non-audit fees and discretionally accruals to draw inferences on auditor independence. Their results suggest that auditor independence is compromised when the client pays higher non-audit fees compared to audit fees. Consequently, we use discretionally accruals ($DACC$) as an alternative proxy for auditor independence. We follow the modified Jones (1991) model to measure the $DACC$. The results reported in Table 8 are qualitatively similar to our main results. Panel 1 demonstrates a significant positive relationship between $PROP$ and $DACC$ under stable
economic conditions (PRIOR), indicating lower auditor independence because of a greater proportion of non-audit fees.

Moreover, we use loss avoidance (LA) as another alternative proxy for auditor independence to test the sensitivity of our results. Prior research shows that firms consistently manipulate earnings to avoid reporting losses (Brown and Caylor, 2005; Burgstahler and Dichev, 1997). Higher loss avoidance translates towards lower auditor independence. We use LA as a dummy variable “1” if firms report the return on assets (ROA) between 0% and 1% in a given year and “0” otherwise. The results reported in Table 8 Panel 3 show that PROP is positively and significantly associated with LA, suggesting that a higher proportion of non-audit to audit fees results in auditors missing clients’ earnings management to avoid reporting losses. On the other hand, Table 8 Panels 2 and 4 show an insignificant relationship between PROP, DACC and LA during unstable economic conditions.

6. Conclusion and future recommendations

We examine the association between the non-audit services fees relative to audit fees and auditor independence under stable and unstable economic conditions. We find that a greater
The proportion of non-audit services fees to audit fees is more likely to impair auditor independence under stable economic conditions for financially distressed firms. In contrast, we find that non-audit services fees are not associated with auditor independence when economic conditions are unstable. Our results support Carson et al. (2019) and Ettredge et al. (2017), demonstrating that macro-economic conditions influence the objectivity of auditors.

Prior research is inconsistent as to whether a greater proportion of non-audit services fees to total audit fees reduces auditor independence. The reputation of an auditor and their perceived objectivity are important regardless of economic conditions. However, results suggest that auditors are less conservative during stable economic periods and non-audit service revenues are most likely to impair auditor independence in this context. Other incentives such as reputational losses and litigation risk become more prevalent during unstable economic conditions, alleviating concerns regarding independence and non-audit services fees. Furthermore, our results are robust to different model specifications and endogeneity concerns.

We contribute to a contentious issue, demonstrating to researchers and regulators that macro-economic conditions influence the strength of incentives related to non-audit services for auditors. Future research is encouraged to control for significant changes in macro-economic conditions when examining the association between non-audit services and auditor independence.

Our study is limited by the ability to control for all outside influences that can potentially influence the auditor’s judgment in forming GCOs. Further research

<table>
<thead>
<tr>
<th>Variables</th>
<th>DACC</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel 1</td>
<td>Panel 2</td>
<td>Panel 3</td>
</tr>
<tr>
<td>PRIOR</td>
<td>GFC and AFTER</td>
<td>PRIOR</td>
</tr>
<tr>
<td>OLS</td>
<td>OLS</td>
<td>Probit</td>
</tr>
<tr>
<td>Coefficients</td>
<td>Coefficients</td>
<td>Coefficients</td>
</tr>
<tr>
<td>(t-statistic)</td>
<td>(t-statistic)</td>
<td>(Z-statistic)</td>
</tr>
<tr>
<td>PROP</td>
<td>0.062** (2.577)</td>
<td>0.068 (0.734)</td>
</tr>
<tr>
<td>ZMIJ</td>
<td>0.001 (1.063)</td>
<td>0.002*** (3.024)</td>
</tr>
<tr>
<td>OCF</td>
<td>−0.002 (−1.135)</td>
<td>−0.004 (−0.853)</td>
</tr>
<tr>
<td>WCAP</td>
<td>−0.061*** (−3.224)</td>
<td>−0.056 (−1.067)</td>
</tr>
<tr>
<td>DEBTORS</td>
<td>0.093** (2.195)</td>
<td>0.088 (0.961)</td>
</tr>
<tr>
<td>CURRENT</td>
<td>−0.000** (−2.564)</td>
<td>0.002 (1.182)</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.005 (0.419)</td>
<td>−0.018 (−0.592)</td>
</tr>
<tr>
<td>XGCO</td>
<td>0.035** (2.109)</td>
<td>0.356*** (3.547)</td>
</tr>
<tr>
<td>TONE</td>
<td>−0.049* (−1.666)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.098** (2.476)</td>
<td>0.068 (0.734)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.0248</td>
<td>0.0392</td>
</tr>
<tr>
<td>Observations</td>
<td>1,415</td>
<td>3,981</td>
</tr>
</tbody>
</table>

**Notes:** *p < 0.10, **p < 0.05 and ***p < 0.01. Variable definitions: PRIOR = financially distressed firms during the period of 2005 to 2007; GFC and AFTER = financially distressed firms reporting for the period from 2008 to 2014; DACC = discretionary accruals; LA = 1 for firms reporting “return on assets” between 0 and 1%, 0 otherwise; PROP = non-audit fees divided by non-audit fees plus audit fees at financial year end; ZMIJ = probability of bankruptcy using Zmijewski (1984) model; OCF = operating cash flow divided by total assets at financial year end; WCAP = working capital is current assets minus current liabilities at financial year end; DEBTORS = accounts receivable divided by total assets at financial year end; CURRENT = current assets to current liabilities at financial year end; BIG4 = 1 for Big four auditing firm, 0 otherwise; XGCO = 1 for companies with going concern opinion in prior year, 0 otherwise; and TONE = 1 for firms reporting during the period of 2012 to 2014, 0 otherwise.
opportunities exist to provide more substantive evidence regarding non-audit services and their influence on the objectivity of auditors for non-distressed firms. Partner risk profiles and their relation to objectivity and non-audit services are also additional areas for research to further understand auditor conservatism and independence.

Notes
1. However, under SOX2002 (Section 201), a certified public accounting firm may provide tax services which are not expressly forbidden after receiving pre-approval from the audit committee.
2. According to Murphy (2020), non-audit fees accounted for less than 20% of overall auditor fees in 2018, which is a substantial decrease from 51.1% over the past 17 years.
3. GCO is formed by the auditor when the entity is less expected to be able to pay the debts on due date and continue its operations (AUS708, Para 6, AUASB).
4. We classify stable economic conditions as the period before the GFC and unstable economic conditions as the period during and after the GFC.
5. The percentage of forming GCO was 34.73% during unstable economic conditions, whereas it was 12.12% under stable economic condition (CPA Australia, 2017).
6. As per economic theory of auditor independence, client importance provides opportunities to auditors to generate economic incentives, which impairs the auditor independence (Chung and Kallapur, 2003; Hardies et al., 2016).
7. Carson et al. (2019) are primarily interested in measuring auditor reactions throughout the global crisis event (2008–2011) and during a period of increased scrutiny for audit firms (2012–2014). In the meantime, Xu et al. (2011) look into how auditors react to high risk in the case of a global economic crisis. Furthermore, unlike the present investigation, both studies use the model to define auditor decision that refers to Type 2 misclassification, which occurs when a financially distressed client declares bankruptcy as a result of the auditor’s inability to provide a going concern-modified opinion (Krishnan and Krishnan, 1996).
8. Institute of Chartered Accountants of Ontario Rule 204.4(21) specifies that without an approval from the audit committee, an audit firm cannot provide professional services to the client.
9. As per Ramsay (2001 report, pp. 55-69), there is no evidence suggesting that the failures of high-profile firms were because of auditors rendering non-audit services to clients.
10. There are mainly three group users who are interested in auditor’s opinion including managers, shareholders (majority and minority) and creditors (Goldman and Barlev, 1974).
11. Goldman and Barlev (1974) suggest that a drop of valuable advice restricts client to switch auditor. Consequently, this action develops the power of auditor that constructs novel hazard to auditor’s independence (Goldman and Barlev, 1974).
12. The lawsuits against auditor reduce a minor market value of a client which will be significantly higher than the total revenue earned by the auditor simultaneously to maximize the litigation (or reputation) cost towards auditor (Reynolds and Francis, 2001; Gul et al., 2006).
13. In the USA, Harris (2014) finds that the proportion of non-audit services revenue (including tax services) is more than 57% of the total revenues of large audit firms. The scale of non-audit services has also increased over time, and it is likely associated with audit quality (Tysiac, 2014).
14. Such as Auditing and Assurance Standard Board 701 (2019); Auditing and Assurance Standard Board 570; SOX 2002; and CLERP 9.
15. A company is not considered financially distressed if it does not meet at least one of the following three criteria (1) negative working capital, (2) negative operating profit in the last years before bankruptcy, (3) negative retained earnings in three years preceding bankruptcy or (4) a bottom-line loss in any of last three years before bankruptcy (Kida, 1980; Mutchler, 1985).

16. We perform the Chow (Chow, 1960) test to examine whether the pooled regression or the disaggregated regression is more appropriate. The Wald version of Chows test results in rejecting the null hypothesis ($\chi^2 (10) = 964.60; p$-value = 0.000) and indicate that subsamples (PRIOR and GFC and AFTER) are statistically significantly different from the pooled sample.

17. ZMIJ variable calculated via Zmijewski (1984) prediction model. This model uses current ratio, return on assets and leverage ratio (total liability/total assets) to measure the firm’s bankruptcy. Zmijewski (1984) has highest predictive power in comparison with Altman (1968) and Ohlson (1980) (Avenhuis, 2013).

18. For brevity purposes, we have not included full results of simultaneous equation modelling.

19. In addition to economic theory and sensitivity analysis, we have also used D’Haultfoeuille et al. (2021) test to check for the validity of IV. The test reports the KS Statistics of 1.186 with the $p$-value of 0.000, suggesting that the IV meets the exclusion restriction and is a valid instrument.

20. For brevity purposes, we only report the 2SLS results.

References


Avenhuis, J.O. (2013), “Testing the generalizability of the bankruptcy prediction models of Altman”, Ohlson and Zmijewski for Dutch Listed and Large Non-listed Firms. (University of Twente).


Further reading


**Table A1. Variable definitions**

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Definition</th>
<th>Exp. sign</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIG4</strong></td>
<td>If Big four auditing firm 1, otherwise 0</td>
<td>+</td>
<td>Clarkson <em>et al.</em> (2003), Xu <em>et al.</em> (2011)</td>
</tr>
<tr>
<td><strong>CURRENT</strong></td>
<td>Current assets to current liabilities at financial year end</td>
<td>−</td>
<td>Xu <em>et al.</em> (2011)</td>
</tr>
<tr>
<td><strong>DEBTORS</strong></td>
<td>Account receivables to total assets at financial year end</td>
<td>+</td>
<td>Xu <em>et al.</em> (2011)</td>
</tr>
<tr>
<td><strong>GCO</strong></td>
<td>Assign 1 when auditor forms GCO, otherwise 0</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td><strong>OCF</strong></td>
<td>Operating cash flows divided by total assets at financial year end</td>
<td>−</td>
<td>Geiger and Blay, (2011)</td>
</tr>
<tr>
<td><strong>PROP</strong></td>
<td>Non-audit fees divided by non-audit fees plus audit fees at financial year end</td>
<td>−</td>
<td>Sharma and Sidhu (2001)</td>
</tr>
<tr>
<td><strong>TONE</strong></td>
<td>For firms reporting during the period of 2012 to 2014 we assign 1, otherwise 0</td>
<td>+</td>
<td>Carson <em>et al.</em> (2019)</td>
</tr>
<tr>
<td><strong>WCAP</strong></td>
<td>Working capital is current assets minus current liabilities at financial year end</td>
<td>−</td>
<td>Robinson (2008)</td>
</tr>
<tr>
<td><strong>XGCO</strong></td>
<td>Assign 1 to companies receiving a GCO in the prior year, otherwise 0</td>
<td>+</td>
<td>Reynolds and Francis. (2001)</td>
</tr>
</tbody>
</table>

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