

Non-audit service and auditor independence: an examination of the Procomp effect

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Abstract This paper examines whether non-audit service provision impairs auditor independence, and whether the degree of auditor independence in Taiwan changed in the wake of the 2004 Procomp scandal. The auditors involved in the Procomp affair were suspended from practice for 2 years and were sued, and we posit that these unprecedented sanctions and litigation affected subsequent auditor behavior. Considering the measurement errors involved in discretionary accruals, we propose an alternative analytic approach in which the dependent variable in the regression analysis is the difference between audited earnings and forecast earnings, scaled by total assets, and the primary independent variable is the non-audit fees ratio. After controlling for the effects of financial leverage, operating and market performance, industry, company size, audit firm size, management forecast error, and management attempts to manipulate earnings, regression analysis indicates that the coefficient for non-audit fees ratio is negative and significant in 2003 but not in 2004. Using non-audit fees instead of non-audit fees ratio to conduct the regression analysis yields similar results. This finding is consistent with the notion that auditors make a trade-off between gaining service fees and avoiding litigation and reputation loss. Limitations and policy implications are also offered.

Keywords Non-audit service · Auditor independence · Procomp scandal

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1 Introduction

This paper investigates whether non-audit service provision impairs auditor independence, and whether the magnitude of auditor independence in Taiwan changed significantly following the Procomp scandal.¹ Proponents of non-audit service provision assert that synergies of knowledge spillover and audit efficiency arise from providing both audit and non-audit services (Simunic 1984; Palmrose 1986). However, critics contend that providing non-audit service increases auditors' financial reliance on the client and hence may weaken auditor independence (Wines 1994; Beeler and Hunton 2001; Frankel et al. 2002; Firth 2002). While some empirical evidence suggests a negative association between non-audit service and auditor independence (Wines 1994; Frankel et al. 2002; Firth 2002), other evidence indicates that the threat of lawsuits and reputation loss provides sufficient countervailing incentives and sees no compromise of auditor independence (Crasewell et al. 2002; Defond et al. 2002; Ashbaugh et al. 2003; Chung and Kallapur 2003; Elder et al. 2003; Kinney et al. 2004).

We believe that these inconsistent findings may be attributed to the use of discretionary accruals as a proxy of auditor independence. Most prior empirical research has relied on a modified Jones model to estimate discretionary accruals. DeFond et al. (2002) argue that discretionary accruals are likely to be an indirect proxy, and there are empirical problems with measuring discretionary accruals. Healy (1996) points out that the existing model cannot adequately incorporate the effect of changes in business fundamentals. Discretionary accruals also confuse audit quality with earnings quality because the audited financial report is the joint product of management and the auditor (Antle and Nalebuff 1991).

To investigate the auditor independence issue more deeply, in this paper we propose an alternative analytic approach. This analysis uses the unique setting in Taiwan, which requires listed companies to publicly announce un-audited earnings and report to the Securities and Futures Commission (SFC) on the reasons for the discrepancy between audited and forecast earnings, as well as between un-audited and forecast earnings, if either of them exceeds a certain amount or percentage.² This requirement could increase management's incentive to manipulate earnings and influence their auditors' behavior. Therefore, we adopt the difference between audited earnings and forecast earnings as the dependent variable and non-audit fees ratio as the independent variable of primary interest in the regression analysis. While this dependent measure approximates audit adjustment, it may be subject to management forecast error and management's attempts at earnings manipulation. We take several steps to make the coefficient for the independent variable capture the effect of non-audit service on audit adjustment. To control for the possible effect of the forecast error, we use the last (rather than the first) earnings forecast issued by management. Additionally, since management has incentives to reduce the gap between un-audited earnings and forecast earnings, and may attempt to influence its auditors, we

¹ See the Appendix for a description of the Procomp scandal.

² In an institutional situation unique to Taiwan, listed companies that have announced earnings forecast during a given year are required to announce their un-audited annual earnings by the end of January of the following year. Listed companies are required to announce their audited annual earnings by the end of April regardless of whether or not they have issued an earnings forecast.

introduce a further measure, namely the interaction between non-audit fees ratio and the discrepancy between un-audited earnings and forecast earnings, and use this interaction term as a proxy for management's attempt to manipulate earnings (hereafter "manipulation"). A positive coefficient of manipulation provides supplementary evidence for auditors' compromise of independence when also providing non-audit service to their audit clients.

The Sarbanes-Oxley Act, passed in the U.S. after the Enron collapse, lists eight types of services that are "unlawful" if provided to a publicly held company by its auditor. Three years after the Enron scandal, the Procomp scandal unfolded in Taiwan and aroused public attention to the independence of auditors providing audit service. Although the Procomp scandal was not associated with non-audit service per se, the unprecedented sanctions imposed quickly by the Financial Supervisory Commission (FSC), and litigation against auditors by the Securities and Futures Investor Protection Center ("Investor Protection Center" hereafter) in Taiwan may well have caused auditors to re-examine the balance between two types of incentives: service fees as opposed to litigation risk and reputation loss.³ Whether auditors' independence is compromised by providing both audit and non-audit services to their client, and whether auditor independence has been strengthened since the Procomp scandal, are important but unsettled issues.

This paper examines these issues in the attempt to contribute to the literature by using an alternative analytic approach. In addition, to our knowledge, our paper is the first to use field-archival data to investigate auditor independence in the context of non-audit service provision in the wake of the Procomp scandal. Our results indicate that the non-audit fees ratio was significantly and negatively associated with audit adjustment in 2003 (prior to the Procomp event) but not in 2004 (after the event). As expected, the coefficient of manipulation for 2004 was significantly smaller than that for 2003. Using non-audit fees (rather than non-audit fees ratio) as an independent variable yields similar results. These findings have implications for the amendment of the CPA Law currently under deliberation in that proscribing non-audit service may not be the only route to strengthening auditor independence.

The remainder of the paper is arranged as follows. The next section reviews the relevant literature and develops our research hypotheses. Section 3 describes our sample and research design. Section 4 presents the empirical results. The final section summarizes our findings.

2 Prior literature and hypotheses

Recent concerns about auditor independence have focused on the provision of non-audit services to audit clients. Scholars are concerned that benefits, either from cost savings or from fee revenue increases, strengthen the economic bond between auditors and their clients, which can threaten auditor independence (e.g., Beck et al. 1988; Beeler and Hunton 2001). However, Arrunada (1999) argues that provision of non-audit services increases the audit firm's investment in reputation capital, which the auditor is not likely to jeopardize to satisfy the demand of any single client. Considering that their future quasi

³ Shortly after the Procomp scandal emerged in June 2004, the FSC suspended the company's auditors from practice for 2 years, and the Investor Protection Center filed a class action civil suit against those auditors. The Procomp scandal is not associated with provision of non-audit services to the audit client per se, but the severe and fast sanctions and legal action against auditors had never occurred in Taiwan before.

rent stream could be forfeited, auditors will not be tempted to compromise their independence (DeAngelo 1981). In addition, Dopuch et al. (2004) state that provision of non-audit services increases reputation capital since the probability of misstatement risk is lowered.

Empirical tests on the association between non-audit fees and independence have largely relied on estimates of “discretionary” accruals obtained from variations of the Jones (1991) model. Frankel et al. (2002) first proxy auditor independence by discretionary accruals estimated with a cross-sectional modified Jones model and use sample data from proxy statements filed with the SEC between February 2001 and June 2001 to test for this association. They find a significant and positive relationship between non-audit services and the magnitude of earnings management and conclude that financial bonding from non-audit services impairs auditor independence. Studies subsequent to Frankel et al. (2002) obtain contrasting results because of different approaches for measuring fees and accruals; for instance, Chung and Kallapur (2003) argue that the non-audit fees ratio cannot reflect the degree of economic dependence. They suggest using the ratio of client fees (or non-audit fees) to the audit firm’s total revenues as a measure of client importance. They find no relationship between accruals and provision of non-audit services. Ashbaugh et al. (2003) employ performance-adjusted measures of discretionary accruals and group them into income-increasing and income-decreasing accruals. They find no association between the non-audit fees ratio and income-increasing discretionary accruals. But, income-decreasing discretionary accruals have a significant relationship with the non-audit fees ratio. Ashbaugh et al. (2003) conclude that auditors do not compromise their independence when clients pay high non-audit fees. Elder et al. (2003) investigate the relation between auditor size, non-audit services, and loan loss provisions of commercial banks audited by “Big 5” CPA firms. They find a positive relation between non-audit services and loan loss provisions. Antle et al. (2006), applying a simultaneous equations model to test the confluence of audit fees, non-audit fees and abnormal accruals, document that knowledge spillovers from non-audit services lead to a negative association between non-audit fees and abnormal accruals.

Using audit qualification as a proxy for auditor independence, Wines (1994) finds that, for a sample of publicly listed companies in Australia, auditors of companies not receiving an audit qualification of any type derive a significantly higher proportion of their remuneration from non-audit service fees than the auditors of companies receiving at least one audit qualification. Firth (2002) obtains the same results using data from the U.K. This observed relationship may result from auditor independence, and/or from the consultancy services clearing up uncertainties and disagreements prior to the audit. DeFond et al. (2002) use distressed firms in the U.S. as their sample and find no association between going concern opinions and either total fees or audit fees. The results are consistent with market-based incentives, such as loss of reputation and litigation costs, dominating the expected benefits from compromising auditor independence. Crasewell et al. (2002) use a qualified audit opinion as an indicator of the exercise of auditor independence and measure fee dependence at both the national audit firm level as well as the local office level. They find that the degree of auditor fee dependence does not affect auditors’ propensity to qualify their audit opinions. Kinney et al. (2004) do not find a significant positive association between non-audit fees and restatements.

Using publicly disclosed data on audit and non-audit fees, researchers in Taiwan have also investigated the association between non-audit service provision and auditor independence. Lee et al. (2003) find that auditors providing both audit and non-audit services will allow a higher magnitude of income-increasing accruals, whereas they find no

significant relationship between income-decreasing accruals and provision of non-audit services. Lu (2003) finds no relationship between the non-audit fees ratio and the absolute value of abnormal accruals, but reports a significant interactive effect of engagement risk and non-audit fees, suggesting that high engagement risk leads the auditor to suppress the clients' earnings management. Using types of auditor reports as a dependent variable, Hu (2002) shows that provision of non-audit services is related to the type of audit report and the change of auditors. The study further indicates that the likelihood of auditor change is lower when a CPA firm renders both services, implying that auditor independence may be adversely affected.

In summary, prior research yields mixed findings on the contention that non-audit services impair auditor independence. Methodological factors may account for the inconsistency. DeFond et al. (2002) argue that the use of earnings management as estimated by a modified Jones model for surrogates of auditor independence is likely to be an indirect proxy, and there are empirical problems in measuring discretionary accruals. Healy (1996) points out that the obvious deficiency of the existing model lies in its inability to incorporate adequately the effect of changes in business fundamentals. For example, a firm's transition through lifecycle stages and types of business induce demands for accounting services that are likely to be incorrectly classified as discretionary accruals by the current model. Discretionary accruals also confuse audit quality with earnings quality because the audited financial report is the joint product of management and the auditor (Antle and Nalebuff 1991).

Using audit opinion as a proxy for auditor independence, Joe (2003) examines whether auditors are more likely to issue going-concern modified opinions when the client has been the subject of negative press coverage prior to the date of the audit opinion. The results show that negative press coverage leads the auditor to modify the audit opinion. Thus, using opinion type as a proxy also suffers from measurement error. The current study therefore adopts an alternative approach to examine this issue. Details are explained in a later section.

Extant research finds that auditors tend to make decisions consistent with their incentives. However, auditors generally face two conflicting incentives. One is to retain clients, and the other to avoid litigation and reputation loss. A type I error by auditors may entail client loss while a type II error may subject auditors to lawsuits and reputation loss.⁴ Farmer et al. (1987) indicate that "threat of client loss" and "threat of lawsuit" influence an auditor's willingness to accept controversial reporting methods. Schwartz (1998) indicates that auditor effort level varies with legal liability rules. She further shows that a legal regime consisting of a vague negligence rule supports the credibility of auditing standards, which enable auditors to commit to audit quality that is higher than the quality attainable under a vague due care principle. Lord (1992) and Hackenbrack and Nelson (1996) provide experimental evidence that incentives influence auditors' behavior. We

⁴ According to SAS No. 39, Type I and Type II errors are the two types of decision errors that an auditor can make when deciding that sample evidence supports or does not support a test of controls or a substantive test based on a sampling procedure. These errors are sometimes referred to as alpha and beta risks. In relation to tests of controls, a type I error occurs when the assessed level of control risk based on the sample is greater than the true risk given the effectiveness of the control in practice, and a type II error occurs when the assessed level of control risk based on the sample is less than the true risk given the effectiveness of the control. In relation to substantive tests, a type I error is made when the sample supports the conclusion that the recorded account balance is materially misstated when it is not materially misstated, and a type II error is made when the sample supports the conclusion that the recorded account balance is not materially misstated when it is materially misstated. We applied the above concept in our study.

posit that providing non-audit services to audit clients tends to enhance auditors' incentives to keep clients relative to their incentives to avoid litigation and reputation loss, especially prior to the Procomp scandal. We thus formulate the first hypothesis as:

H1: The provision of non-audit services to the audit client will influence auditor decisions in favor of the client.

Since the Enron collapse in 2001, there have been studies examining the market reactions to Arthur Anderson clients and other Big4 clients. Dunne et al. (2005) find that their stock prices fell and the market suspected the quality of information provided by auditors, indicating that the event impaired auditors' reputation. In addition, Lai (2003) finds an increasing number of going concern opinions issued by auditors. Krishnan (2004) argues that increasing earnings conservatism has become a common strategy to rebuild reputation for auditors. Hoitash et al. (2005) identify a significant positive association between non-audit fees and discretionary accruals in years 2000 and 2001, but no such association in post-Enron years, concluding that auditor independence improved. The above findings suggest that the behavior of stakeholders, including auditors, has changed. In Taiwan, the FSC immediately sanctioned auditors involved in the Procomp scandal. The Investor Protection Center also filed a class action suit against the auditors and CPA firms involved. Such instant sanctions and legal actions can be expected to increase auditors' estimation of the potential litigation costs and reputation losses their behavior exposes them to. In view of the higher potential cost of litigation and reputation loss, auditors would re-examine the balance between the incentive to retain clients and the incentive to lower litigation risk and risk of reputation loss, and thus behave more independently. Consequently, we propose the following hypothesis:

H2: In the post-Procomp period, the observed level of auditor independence will be enhanced when providing both audit and non-audit services to audit clients.

Examining H2 can provide insights into whether the sanctions and litigation against auditors involved in the Procomp scandal have induced auditors in Taiwan to re-examine the balance between quasi rents and litigation loss. It could also have policy implications about mechanisms for improving auditor independence other than simply barring non-audit services to audit clients.

3 Research methods

3.1 Research design

Using discretionary accruals estimated from a modified Jones model as a surrogate for auditor independence is a popular approach in the extant literature. However, this approach has measurement problems, as indicated by Healy (1996) and DeFond et al. (2002). Consequently, we take an alternative route by calculating the absolute value of differences between audited and forecast earnings, scaled by total assets, to approximate audit adjustment subject to considerations of management forecast error and management's attempts at earnings manipulation. Listed companies in Taiwan that announce their earnings forecast in a given year are required to disclose their un-audited earnings by the end of January of the next year. If the un-audited earnings deviate from the earnings forecast by a certain amount or percentage, companies must file an explanation with the SFC and may be subject to SFC scrutiny. Similarly, if audited earnings deviate from

forecast earnings by a certain amount or percentage, the company and its auditors should announce the difference and file an explanation/opinion with the SFC. The purpose of this requirement is to prevent companies from exploiting earnings forecasts to manipulate stock prices. However, this stipulation could encourage listed companies to manage earnings to meet the forecast. It could also encourage auditors to prepare audit adjustments that result in a small deviation from forecast earnings. Jaggi et al. (2006) support the contention that audited earnings are manipulated, which reduces reporting quality, and that the incentive to manipulate is attributable to the forecast error threshold of Taiwan's forecast disclosure regulations. Given this incentive, differences between audited and forecast earnings will more directly capture audit adjustment, with larger deviations representing less compromise of independence. We use the absolute value of the difference, scaled by total assets at the end of the previous year, as a proxy of audit adjustment. If the relationship between the non-audit fees ratio and audit adjustment is negative, it implies a compromise of independence. However, we also notice that the magnitude of this measure may be partly due to management forecast error. To control for this effect, in the above calculation we use the last rather than the first earnings forecast that management issues. In addition, since management has incentives to reduce the gap between un-audited earnings and forecast earnings and may attempt to influence their auditors, we introduce the interaction between the non-audit fees ratio and the discrepancy between un-audited earnings and forecast earnings as a proxy for management's attempt to manipulate earnings (i.e., the "manipulation" variable mentioned previously). A positive coefficient of manipulation provides supplementary evidence for auditors' compromise of independence when jointly providing non-audit services to their audit clients.

To test our hypotheses, following Frankel et al. (2002), Chung and Kallapur (2003), and Ashbaugh et al. (2003), we form our independence testing model:

$$\text{Diff} = f(\text{fees, manipulation, other control variables}) \quad (1)$$

where, Diff represents audit adjustment measured by the absolute value of the difference between audited and forecast earnings, scaled by total assets at the end of the previous year. Most prior research uses the ratio of non-audit fees to total fees as an explanatory variable. We further disaggregate total fees into components. This permits us to test the separate incentive effects of audit and non-audit fees and mitigate correlated omitted variables bias, as audit and non-audit fees are positively correlated (Frankel et al. 2002). In model 2, "fees", therefore, indicates the alternative specifications of fee measurements.

We also include audit firm size as a proxy of audit quality. Prior research suggests that Big5 auditors are less likely to allow earnings management than non-Big5 auditors (Frankel et al. 2002; DeFond et al. 2002; Craswell et al. 2002; Ashbaugh et al. 2003). Using the forecast earnings data contained in the IPO prospectuses of Australian companies, Hartnett (2006) finds a negative association between audit firm size (Big5 versus non-Big5) and the upward bias of management's forecasts. Thus, our study includes a Big4 indicator variable (labeled as Big4). In addition, Reynolds and Francis (2001) suggest that companies experiencing financial distress tend to manipulate their earnings and hence resist the adjustment proposed by auditors to decrease the probability of debt default or increased capital costs. We thus use the debt ratio (Leverage) and an indicator variable (Loss, with a value of one if the firm reported a loss) to measure financial risk. Frankel et al. (2002), Ashbaugh et al. (2003) and Hoitash et al. (2005) document that institutional investors can acquire information at low cost and have specific monitoring capabilities. As the portion of ownership held by institutional investors increases, tolerance for earnings

management behavior decreases. Thus, in the model we control for the percentage of shares held by institutional investors (*Ins%*). Dechow et al. (1995) indicate that firm performance is related to earnings quality. Francis and Ke (2002), Frankel et al. (2002), Chung and Kallapur (2003), and Ashbaugh et al. (2003) also include firm performance in their studies. We therefore use abnormal returns (*RET*), defined as stock returns minus market returns, to control for performance effects. In addition, because companies in the electronics industry experienced relatively more financial scandals and legal sanctions in the period under study, we believe that they have higher litigation risk. Francis et al. (1994) suggest that companies with high litigation risk are more likely to manage earnings. We thus use an indicator variable (*ID*) to control for litigation risk effects, where *ID* equals one if the company operates in the electronics industry (as indicated by the industry coding used by the Taiwan Stock Exchange (TSE) and GreTai Securities (GreTai)). Lastly, we control for the effect of firm size (*Size*) to capture the effect of any omitted size-related variable(s) (Becker et al. 1998; Lee et al. 2003). Size is measured by the natural logarithm of operating cash flow. Accordingly, our complete model is as follows:

$$\text{Diff} = \beta_0 + \beta_1 \text{Fees}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{Big4}_{it} + \beta_6 \text{Ins\%}_{it} + \beta_7 \text{RET}_{it} + \beta_8 \text{ID}_{it} + \beta_9 \text{Manipulation}_{it} + \varepsilon_{it} \quad (2)$$

To test H1, we analyze the above model (model 2) and estimate the regression coefficients for 2003 and 2004, respectively. We expect that the coefficients of β_1 will be significantly negative. In order to test H2 on the effects of sanctions and litigation associated with the Procomp scandal, we observe the change in statistical significance and also use an *F* test to examine the difference in the coefficient between 2 years (2003 β_1 versus 2004 β_1).

3.2 Sample and data source

This study employs audit fee data publicly disclosed by companies listed on the TSE and the GreTai securities market for 2003 and 2004. Starting in 2002, listed companies have been required to disclose non-audit fees information if they paid non-audit fees and audit fees to the same audit firm with a ratio higher than 25% or with non-audit fees exceeding NTD 500,000 (about USD 15,295).⁵ In addition, companies facing one of the following two situations are required to disclose audit fee information: (1) Companies that change their audit firm and whose audit fees are less than those of the previous year; or (2) Companies whose audit fees are less than the previous year's by more than 15%. Companies disclosing either non-audit fees or audit fees constitute a sample of 213 and 164 for 2003 and 2004, respectively. However, companies disclosing non-audit fees do not necessarily disclose audit fee information, and vice versa. We thus exclude 25 and 39 observations, respectively. In addition, data provided by financial service companies and outliers are excluded, because including the financial service industry and outliers in the analysis will distort the empirical results. Further, some companies do not provide either forecast earnings information or complete financial data, and are thus excluded. This procedure results in 51 and 37 firms for 2003 and 2004, respectively. To make the results comparable, it is desirable to include the same firms in the sample for both years. However,

⁵ The NT dollar to US dollar conversion rate used is 32.69:1. In the following, we use this conversion rate to express figures in US dollars.

Table 1 Sample selection

	2003	2004
Initial sample with fee disclosures	213	164
Missing audit fee data	(0)	(1)
Missing non-audit fee data	(25)	(38)
Firms in financial service industries	(21)	(22)
Missing earnings forecast data	(95)	(50)
Other information incomplete	(16)	(15)
Extreme value	(5)	(1)
Selection by matching firm size	(14)	
Total	37	37

this could not be achieved due to the resulting small sample, which would have made the statistical analysis infeasible. As an alternative, we used the sample size of 2004 as a benchmark, and kept the sample size for both years identical. We first selected firms that were common to both years and then selected firms in the 2003 sample by matching firm size. Table 1 explains the data selection method. While firms in both years are not identical, there is no statistically significant difference in firm features, such as total fees, audit fees, non-audit fees, and leverage, among others. Descriptive statistics for the 2 years are shown in Table 3.

Fee data were extracted from footnotes to the annual financial reports of each company. The annual financial reports are posted on the Market Observation Post System website. Other information on company characteristics, financial data and ownership structure for each company was obtained from the Finance File and Directorship File of the *Taiwan Economic Journal* Database (hereafter TEJ).

Table 2 shows the distribution of sample firms across industries as classified by TSE and GreTai. It shows that 70% of our sample is from the electronics industry. Though we exclude financial service companies from the analysis, the number of companies in this sector is more than half of that in the electronics industry, indicating that both industries are major sources of demand for non-audit services.

Table 2 Sample distribution by industries

Industry	Code	2003	2004
Food	2	0	2
Plastic	3	1	1
Electrical machinery	5	0	1
Paper	8	1	0
Iron and steel	10	1	2
Rubber	11	0	1
Automobile	12	1	3
Electronics	13	29	25
Construction	14	1	1
Department stores	18	1	0
Other	20	2	1
Total		37	37

Table 3 Descriptive statistics

	<i>N</i>	Mean	Median	SD	Max	Min
<i>Panel A. Descriptive statistics for 2003</i>						
Diff	37	0.016	0.014	0.014	0.056	0.001
CPA opinion	37	0.541	1	0.505	1	0
Non-audit fees ratio	37	0.308	0.298	0.138	0.776	0.065
Total fees	37	4895.297	3656	3464.266	13587	1000
Audit fees	37	3442.701	2480	2778.029	12704	634
Non-audit fees	37	1452.595	1068	1314.281	7400	260
Size	37	0.062	0.047	0.179	0.571	−0.429
Leverage	37	0.433	0.449	0.148	0.804	0.035
Loss	37	0.189	0	0.397	1	0
Big4	37	0.946	1	0.229	1	0
INS%	37	0.410	0.421	0.217	0.953	0.046
RET	37	−0.021	−0.067	0.269	0.863	−0.445
Industry	37	0.783	1	0.417	1	0
Manipulation	37	0.016	0.013	0.014	0.053	1.34E−5
<i>Panel B. Descriptive statistics for 2004</i>						
Diff	37	0.022	0.019	0.017	0.063	0.0002
CPA opinion	37	0.541	1	0.505	1	0
Non-audit fees ratio	37	0.292	0.282	0.169	0.683	0.026
Total fees	37	4655.216	4018	2759.364	12414	1337
Audit fees	37	3056.946	2710	1517.021	7185	880
Non-audit fees	37	1598.270	1040	1741.942	7674	50
Size	37	0.059	0.074	0.145	0.366	−0.422
Leverage	37	0.427	0.411	0.139	0.829	0.116
Loss	37	0.027	0	0.164	1	0
Big4	37	0.892	1	0.315	1	0
INS%	37	0.347	0.347	0.215	0.802	0.011
RET	37	−0.129	−0.097	0.317	0.461	−0.734
Industry	37	0.672	1	0.450	1	0
Manipulation	37	0.018	0.015	0.016	0.051	0.0002

Diff = the absolute value of difference between forecast and audited earnings scaled by assets

CPA opinion = 1 if modified unqualified auditor reports, and 0 otherwise

Non-audit fees ratio = non-audit fees divided by total fees

Total fees = audit fees plus non-audit fees

Audit fees = a CPA firm's revenue from auditing services

Non-audit fees = a CPA firm's revenue from other services

Size = the natural log of operating cash flow

Leverage = ratio of debt to assets

Loss = 1 if the firm reports loss in the observed year, and 0 otherwise

Big4 = 1 if the firm is audited by Big4 audit firms, and 0 otherwise

Ins% = ownership by institutional investors

RET = stock return minus market return

Industry = 1 if industry code is equal to 13, and 0 otherwise

Manipulation = the absolute value of difference between forecast and un-audited earnings scaled by assets times non-audit fees ratio, where non-audit fees ratio is 1 if non-audit fees ratio is above the mean, and 0 otherwise

4 Empirical results

4.1 Sample characteristics

Descriptive statistics for the variables are presented in Table 3. The total fees were, on average, about NTD 4,895 thousand (about USD 143,775) and NTD 4,655 thousand (about USD 142,398) for 2003 and 2004, respectively. The mean of audit fees was NTD 3,442 thousand (about USD 105,292) and NTD 3,056 thousand (about USD 93,484), respectively, which is 10% higher than that of Chang and Tsao (2005), who use data for 2002. The ratio of non-audit fees to total fees was about 30% in both years. The non-audit fees were NTD 1,452 thousand (about USD 44,417) and NTD 1,598 thousand (about USD 48,883), respectively. Average audit fees decreased by 11.2% from 2003 to 2004, whereas non-audit fees increased by 11%. The trend in fees reveals that audit firms became more dependent on non-audit services revenue.⁶

The average audit adjustment in 2004 was 0.022, which is higher than that of 2003 (0.016). The higher amount of audit adjustment is consistent with auditor independence improving from 2003 to 2004. Therefore, the preliminary analysis provides evidence consistent with hypothesis 2 about the effects associated with the Procomp scandal. As to audit opinion, 54% of sample firms received modified unqualified opinions in both 2003 and 2004 due to these firms' relying on financial statements audited by other auditors in recognizing investment income as required by the equity method. Thus, it was for reasons other than going concern or accounting disputes with auditors that these firms did not receive clean unqualified opinions.

Regarding the control variables, the average firm size for 2003 and 2004 was 0.062 and 0.059, respectively. Liability to asset ratio was around 43% for both years. About 19% of the companies incurred losses in 2003, which was approximately six times the rate in 2004 (3%). About 90–95% of companies in the sample employed Big4 audit firms. Average ownership by institutional investors was 41% in 2003 and 35% in 2004. Abnormal stock returns appear to differ between these 2 years. On average, companies earned a return that was 2% less than the market index in 2003, whereas companies earned a return 13% less than the market index in 2004. It is noteworthy that the above features did not differ significantly between 2003 and 2004 ($ps > 10$), except for the percentage of loss incidence.

Table 4 presents the correlations of variables for pooling data. Audit adjustment has negative correlations with abnormal return and positive correlations with manipulation, but does not have significant correlations with the other variables. The correlations are generally small in absolute value, with the largest correlation equal to 0.34. The tolerance value for each independent variable in our model exceeds 0.1. Values of variance inflation factors for our predictors are all less than 10. Thus, multicollinearity is not a distinct problem in our study.

⁶ Although audit fees and non-audit fees are disclosed to the public, the public may not be able to discern the difference in these fees among companies. We thus use the mean of the fees (ratio) to split the sample. Companies with fees (ratio) higher than the mean are assigned 1; 0 otherwise. In the following, we use the dichotomized fee (ratio) for analysis. We also conduct a robustness check using continuous data (i.e., without dichotomization) in a subsequent section.

Table 4 Pearson correlation

	Diff	Non-audit fee ratio	Total fee	Audit fee	Non audit fee	Size	Leverage	Loss
Diff	1.000	0.012 (0.918)	0.127 (0.281)	0.119 (0.312)	0.132 (0.263)	0.005 (0.967)	-0.182 (0.12)	-0.034 (0.774)
Non-audit fee ratio	0.012 (0.918)	1.000	0.224 (0.055)	-0.202 (0.084)	0.748 (0)**	0.057 (0.628)	0.037 (0.753)	0.259 (0.026)
Total fee	0.127 (0.281)	0.224 (0.055)	1.000	0.905 (0)**	0.756 (0)**	0.063 (0.594)	0.218 (0.062)	-0.044 (0.711)
Audit fee	0.119 (0.312)	-0.202 (0.084)	0.905 (0)**	1.000	0.455 (0)**	0.056 (0.636)	0.189 (0.107)	-0.173 (0.140)
Non-audit fee	0.132 (0.263)	0.748 (0)**	0.756 (0)**	0.455 (0)**	1.000	0.142 (0.227)	0.114 (0.331)	0.104 (0.380)
Size	0.005 (0.967)	0.057 (0.628)	0.063 (0.594)	0.056 (0.636)	0.142 (0.227)	1.000	-0.347 (0.002)**	-0.116 (0.325)
Leverage	-0.182 (0.120)	0.037 (0.753)	0.218 (0.062)	0.189 (0.107)	0.114 (0.331)	-0.347 (0.002)**	1.000	0.202 (0.084)
Loss	-0.034 (0.774)	0.259 (0.026)*	-0.044 (0.711)	-0.173 (0.140)	0.104 (0.380)	-0.116 (0.325)	0.202 (0.084)	1.000
Big4	0.136 (0.248)	0.136 (0.250)	0.229 (0.05)**	0.180 (0.124)	0.313 (0.007)**	0.227 (0.052)	-0.069 (0.559)	0.103 (0.381)
INS%	-0.074 (0.532)	-0.102 (0.387)	0.170 (0.147)	0.234 (0.044)*	0.075 (0.527)	0.173 (0.141)	-0.175 (0.137)	-0.107 (0.366)
RET	-0.346 (0.003)**	0.060 (0.612)	0.024 (0.842)	0.010 (0.936)	0.034 (0.775)	0.059 (0.620)	0.109 (0.354)	0.070 (0.551)
Industry	0.415 (0)**	-0.139 (0.238)	0.033 (0.783)	0.096 (0.415)	0.008 (0.948)	0.170 (0.149)	-0.159 (0.176)	-0.208 (0.075)
Manipulation	0.864 (0)**	-0.076 (0.521)	0.046 (0.699)	0.084 (0.478)	0.044 (0.710)	0.065 (0.583)	-0.294 (0.011)**	-0.139 (0.238)

	Big4	INS%	RET	Industry	Manipulation
Diff	0.136 (0.248)	-0.074 (0.532)	-0.346 (0.003)**	0.415 (0)**	0.864 (0)**
Non-audit fee ratio	0.136 (0.250)	-0.102 (0.387)	0.060 (0.612)	-0.139 (0.238)	-0.076 (0.521)
Total fee	0.229 (0.05)*	0.170 (0.147)	0.024 (0.842)	0.033 (0.783)	0.046 (0.699)
Audit fee	0.180 (0.124)	0.234 (0.044)*	0.010 (0.936)	0.096 (0.415)	0.084 (0.478)
Non-audit fee	0.313 (0.007)**	0.075 (0.527)	0.034 (0.775)	0.008 (0.948)	0.044 (0.710)
Size	0.227 (0.052)	0.173 (0.141)	0.059 (0.620)	0.170 (0.149)	0.065 (0.583)
Leverage	-0.069 (0.559)	-0.175 (0.137)	0.109 (0.354)	-0.159 (0.176)	-0.294 (0.011)**

Table 4 continued

	Big4	INS%	RET	Industry	Manipulation
Loss	0.103 (0.381)	-0.107 (0.366)	0.070 (0.551)	-0.208 (0.075)	-0.139 (0.238)
Big4	1.000	0.126 (0.285)	-0.203 (0.082)	0.178 (0.130)	0.134 (0.254)
INS%	0.126 (0.285)	1.000	0.061 (0.607)	0.144 (0.220)	0.130 (0.268)
RET	-0.203 (0.082)	0.061 (0.607)	1.000	-0.146 (0.216)	-0.214 (0.067)
industry	0.178 (0.130)	0.144 (0.220)	-0.146 (0.216)	1.000	0.431 (0)**
Manipulation	0.134 (0.254)	0.130 (0.268)	-0.214 (0.067)	0.431 (0)**	1.000

Diff = the absolute value of difference between forecast and audited earnings, scaled by assets

Non-audit fees ratio = non-audit fees divided by total fees

Total fees = the natural log of the total fees

Audit fees = the natural log of the audit fees

Non-audit fees = the natural log of the non-audit fees

Size = the natural log of operating cash flow

Leverage = debt divided by assets

Loss = 1 if the firm reports loss in the observed year, and 0 otherwise

Big4 = 1 if the firm is audited by Big4 audit firms, and 0 otherwise

Ins% = ownership by institutional investors

RET = stock return minus market return

Industry = 1 if industry code is equal to 13, and 0 otherwise

Manipulation = the absolute value of the difference between forecast and un-audited earnings, scaled by assets, times non-audit fees ratio, where non-audit fees ratio is 1 if non-audit fees ratio is above the mean, and 0 otherwise

*, ** are significant levels at 0.1, and 0.05 respectively (2-tailed)

4.2 Regression results

Table 5 demonstrates that the ratio of non-audit fees to total fees (i.e., non-audit fees ratio) is negatively and significantly correlated with audit adjustment in 2003 ($t = -2.66$, $p < 0.01$, one-tailed), but not significantly correlated in 2004 ($t = -1.68$, $p > 0.05$, one-tailed), with the magnitude of coefficients being greater in 2003 (-0.0124) than in 2004 (-0.0102). Using non-audit fees rather than non-audit fees ratio as an explanatory variable reveals that the coefficient of non-audit fees is negative and significant in 2003 ($t = -2.30$, $p < 0.05$, one-tailed) while non-significant in 2004 ($t = -1.29$, $p > 0.05$, one-tailed). These results suggest that more non-audit fees are associated with less audit adjustment, implying compromise of auditors' independence. However, the tendency diminishes despite the increase in non-audit fees in 2004. In addition, manipulation has positive coefficients in both years, though the magnitude is smaller in 2004 than in 2003 (the estimated coefficient being 0.5169 for 2004 and 1.0853 for 2003). The F test indicates that the difference in the coefficients for manipulation between 2003 and 2004 is statistically significant ($F = 4.04$, $p < 0.05$, two-tailed). The result provides supplementary evidence on the negative effect of non-audit fees on auditor independence in 2003, but the effect diminishes in 2004.

This finding is consistent with the notion that when auditors emphasize non-audit service fees more than litigation risk and reputation risk, they tend to compromise their independence in performing financial statement assurance. This tendency occurs because litigation risk and risk of reputation loss are low. However, when litigation risk and reputation risk are more severe, auditors will re-consider the trade-off between the two types of incentives (Arrunada 1999; Palmrose 2000; Dopuch et al. 2001). As a result, auditors manifest greater independence by asking for more audit adjustments. Thus, we observe that audit adjustment is negatively and significantly related to non-audit fees ratio (and non-audit fees) in 2003. In 2004, however, under the more stringent legal environment as a result of the Procomp scandal, the coefficient of non-audit fees (ratio) is less negative and not significant. These results are consistent with the arguments by Krishnan (2004) and Hoitash et al. (2005) that the Enron event led auditors to become conservative. Overall, our results support H1 and H2.

With respect to other explanatory and control variables, we find that only a few variables are significant. Of particular interest is that the Big4 have a negative and significant relationship with audit adjustment in 2003, but a positive and non-significant relationship in 2004. A possible explanation is that companies self-select auditors such that firms selecting Big4 auditors require fewer audit adjustments. The fact that the negative coefficient for Big4 is not replicated in 2004 suggests that Big4 and non-Big4 auditors were both similarly conservative after the Procomp scandal.

RET has a positive but insignificant association with audit adjustment in 2003, but the coefficient becomes negative and significant in 2004. This might support the previous explanation that auditors were more conservative in 2004 in reporting earnings.

4.3 Robustness test

To test the robustness of our results, we replicate our analysis using different samples and different fee measurement variables. First, we include only firms from the electronics industry in the sample on the assumption that they faced possible higher litigation risk. Second, we use fee data without dichotomization in the analysis. Lastly, we use median

Table 5 Regressions of audit adjustments and non-audit fees (non-audit fees ratio)
$$\text{Model: Diff} = \beta_0 + \beta_1 \text{Fees}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{Big4}_{it} + \beta_6 \text{Ins}\%_{it} \\ + \beta_7 \text{RET}_{it} + \beta_8 \text{ID}_{it} + \beta_9 \text{Manipulation}_{it} + \varepsilon_{it}$$

	Fees variable measured as non-audit fees ratio			Fees variable measured as non-audit fees and audit fee		
	2003			2004		
	Parameter	t-Value	t-Value	Parameter	t-Value	t-Value
Intercept	0.0293	3.18**	1.09	0.0278	3.41**	1.64
Non-audit fees ratio	-0.0124	-2.66**	-1.68			
Audit fees				0.0029	0.55	-0.29
Non-audit fees				-0.0111	-2.30*	-1.29
Size	0.0022	0.23	-0.72	0.0007	0.08	-1.02
Leverage	-0.0042	-0.37	-0.23	0.0009	0.08	-0.70
Loss	0.0058	1.34	0.78	0.0009	0.24	1.02
Big4	-0.0148	-2.02*	0.30	-0.0148	-2.19*	0.43
Ins%	-0.0033	-0.43	-0.22	-0.0089	-1.24	-1.24
RET	0.0035	0.58	-2.55**	-0.0009	-0.17	-1.81*
Industry	0.0009	0.21	1.83*	0.0012	0.32	1.65
Manipulation ¹	1.0853	6.43**	2.35**			
Manipulation ²				-0.1695 ^a	-0.63	0.88
N	37			1.1520 ^b	5.47**	3.10**
Adj R ²	61.92%	37	42.94%	37	37	
Test for coefficient equality [†]	Non-audit fees ratio (2003) = Non-audit fees ratio (2004)			Audit fee (2003) = Audit fee (2004)		
	Manipulation ¹ (2003) = Manipulation ¹ (2004)			Non-audit fees (2003) = Non-audit fees (2004)		
				Manipulation ² (2003) = Manipulation ² (2004)		

Table 5 continued

Fees variable measured as non-audit fees ratio				Fees variable measured as non-audit fees and audit fee			
2003		2004		2003		2004	
Parameter	t-Value	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value
<i>F</i> value		0.08 (Non-audit fees ratio)				0.09 (Audit fee)	
		4.04* (Manipulation ¹)				0.01 (Non-audit fee)	
						0.11 ^a (Manipulation ²)	
						2.41 ^b (Manipulation ²)	

Diff = the absolute value of difference between forecast and audited earnings scaled by assets

Fees variable is defined as follows:

Non-audit fees ratio = 1 if non-audit fees divided by total fees is above the mean, and 0 otherwise

Audit fees = 1 if the natural log of the audit fees is above the mean, and 0 otherwise

Non-audit fees = 1 if the natural log of the non-audit fees is above the mean, and 0 otherwise

Size = the natural log of operating cash flow

Leverage = debt divided by assets

Loss = 1 if the firm reports loss in the observed year, and 0 otherwise

Big4 = 1 if the firm is audited by Big4 audit firms, and 0 otherwise

Ins% = ownership by institutional investors

RET = stock return minus market return

Industry = 1 if industry code is equal to 13, and 0 otherwise

Manipulation¹ = the absolute value of difference between forecast and un-audited earnings scaled by assets times non-audit fees ratio (dichotomous)

Manipulation² = the absolute value of difference between forecast and un-audited earnings scaled by assets times audit fees variable (a) and non-audit fees variable (b), respectively (dichotomous)

*, **, *** are significant levels at 0.05, and 0.01, respectively (one-tailed for regression analysis; and two-tailed for *F* test)

[†] Tests/*F*-values for the difference in coefficients for fees and manipulation variables between 2003 and 2004

values to dichotomize fee variables. The results from all of the regressions (presented in Panels A, B and C of Table 6) indicate little difference from those in Table 5. Table 6 consistently shows that the coefficient for non-audit fees ratio is negative in both years. The coefficient of manipulation decreases from 2003 to 2004. The significance levels of non-audit fees ratio and manipulation are reduced after the Procomp event. Thus, our findings are not sensitive to our sample selection criteria and different measurement approaches. To further test the sensitivity of our findings to the use of forecast earnings, we additionally use the first earnings forecasts announced by management to calculate the difference between audited earnings and forecast earnings and conduct the same regression analysis. In doing so, we use a dummy variable (*Revise*) to control for the effect of forecast error. Listed companies that subsequently revised their forecasts are coded one; otherwise zero. It is expected that the results based on this alternative will be consistent with those using the last earnings forecast announcement. Table 7 reports the results. As expected, non-audit fees ratio has a negative and significant association with audit adjustment for 2003 but the association is not significant for 2004. The magnitude (absolute value) of the coefficient for 2003 is also significantly greater than that for 2004. The sign of the coefficient for manipulation is positive and significant for 2003 but insignificant for 2004. Overall, our results suggest that after controlling for the effects of management forecast error and management incentive to manipulate earnings, provision of non-audit service has a negative effect on auditor independence in 2003 but not in 2004.

5 Summary and conclusion

This paper investigated whether provision of non-audit services to audit clients impairs auditor independence, and whether auditor independence improved after the Procomp scandal. Using publicly disclosed fee data for fiscal years 2003 and 2004, we tested empirically the associations between non-audit service provision and auditor independence for both years. We used the ratio of non-audit fees to audit fees (i.e., non-audit fees ratio) and non-audit fees as alternative surrogates for the provision of non-audit services. To mitigate the measurement problem when using a modified Jones model to estimate discretionary accruals as a surrogate for auditor independence, we adopted an alternative analytic approach. For the dependent variable in the regression analysis, we used the absolute value of the difference between audited earnings and forecast earnings, scaled by total assets, and used non-audit fees ratio as the independent variable. Since companies have incentives to meet earnings forecasts, the difference between audited and forecast earnings approximates audit adjustment subject to management forecast error and management attempts to manipulate earnings. To control for the effect of earnings forecast error, we used the last earnings forecast that management issues. Further, we controlled for the effect of earnings manipulation attempts by observing the interaction between fee variables and un-audited earnings' deviation from forecast earnings. A positive sign on the interactive term provides supplementary evidence of auditors' compromise of independence.

In the regression analysis, the effects of other factors such as financial leverage, operating and market performance, industry, company size, and audit firm size were also controlled for. The results indicate that the coefficient for non-audit fees ratio is negative in both 2003 and 2004, but becomes insignificant in 2004. Moreover, the interaction term has a positive relationship in both years, with the magnitude of coefficients and significant levels being less in 2004 than in 2003. This finding supports the claim that provision of non-audit services increases auditors' financial reliance on their audit clients and thereby

Table 6 Regression analysis using different samples and measurements

$$\text{Model: Diff} = \beta_0 + \beta_1 \text{Fees}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{Big4}_{it} + \beta_6 \text{Ins}\%_{it} + \beta_7 \text{RET}_{it} + \beta_8 \text{ID}_{it} + \beta_9 \text{Manipulation}_{it} + \varepsilon_{it}$$

	Fees variable measured as non-audit fees ratio				Fees variable measured as non-audit fees and audit fee			
	2003		2004		2003		2004	
	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value
<i>Panel A. Sample of the electronics industry</i>								
Non-audit fees ratio	-0.0400	-2.57**	-0.0400	-2.53**				
Audit fees					0.0083	0.8	-0.0115	-0.96
Non-audit Fees					-0.0005	-0.05	0.0043	0.52
Manipulation ¹	3.2008	8.76**	2.1365	4.94**				
Manipulation ²					-0.5255 ^a	-0.94	0.4521 ^a	1.34
					0.8976 ^b	1.42	-0.2367 ^b	-0.62
Adj R ²	81.83%		57.39%		87.71%		69.95%	
F-test for coefficient equality			0.00 (Non-audit fees ratio) [†]				1.32 (Audit fee) [†]	
			3.11 (Manipulation ¹)				0.08 (Non-audit fee)	
							2.81 ^a (Manipulation ²)	
							1.54 ^b (Manipulation ²)	
<i>Panel B. Fees variables are continuous data</i>								
Non-audit fees ratio	-0.0271	-2.52**	-0.0223	-1.95*				
Audit fees					0.0046	0.59	-0.0109	-1.15
Non-audit fees					0.0037	0.45	0.0070	1.57

Table 6 continued

	Fees variable measured as non-audit fees ratio				Fees variable measured as non-audit fees and audit fee			
	2003		2004		2003		2004	
	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value
Manipulation ¹	3.1143	10.50**	1.9317	5.13**	−0.3710 ^a	−0.83	0.4785 ^a	2.09*
Manipulation ²					0.7303 ^b	1.46	−0.2748 ^b	−1.08
Adj R ²	80.64%		65.08%		87.43%		80.23%	
F-test for coefficient equality [†]							0.08 (Audit fee)	
			0.07 (Non-audit fees ratio)				3.15 (Non-audit fee)	
			5.49* (Manipulation ¹)				4.46 ^{a*} (Manipulation ²)	
							1.92 ^b (Manipulation ²)	
<i>Panel C. Using median to dichotomize fees variables</i>								
Non-audit fees ratio	−0.014	−2.664**	−0.007	−1.333	−0.001	−0.280	−0.006	−1.096
Audit fees					−0.008	−1.728*	−0.003	−0.550
Non-audit fees								
Manipulation ¹	1.026	5.564**	0.614	3.449**	0.155 ^a	0.648	0.492 ^a	2.164*
Manipulation ²					0.955 ^b	4.797**	0.379 ^b	1.778*
Adj R ²	53.0%		53.0%		66.6%		63.5%	

Table 6 continued

Fees variable measured as non-audit fees ratio				Fees variable measured as non-audit fees and audit fee			
2003		2004		2003		2004	
Parameter	t-Value	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value
F-test for coefficient equality [†]							
		0.07 (Non-audit fees ratio)				0.17 (Audit fee)	
		2.55 (Manipulation ¹)				0.47 (Non-audit fee)	
						0.68 ^a (Manipulation ²)	
						2.86 ^b (Manipulation ²)	

Diff = the absolute value of difference between forecast and audited earnings scaled by assets

Fees variable is defined as follows:

Non-audit fees ratio = non-audit fees divided by total fees (dichotomous for Panels A and C, and continuous for Panel B)

Audit fees = the natural log of the audit fees (dichotomous for Panels A and C, and continuous Panel B)

Non-audit fees = the natural log of the non-audit fees (dichotomous for Panels A and C, and continuous for Panel B).

Manipulation¹ = the absolute value of difference between forecast and un-audited earnings scaled by assets times non-audit fees ratio variable (dichotomous for Panels A and C, and continuous for Panel B)

Manipulation² = the absolute value of difference between forecast and un-audited earnings scaled by assets times audit fees variable (a) and non-audit fees variable (b), respectively dichotomous for Panels A and C, and continuous for Panel B)

*, ** are significant levels at 0.05, and 0.01, respectively (one-tailed for regression analysis, and two-tailed for F test)

[†] F-values for testing equality between 2003 and 2004 for coefficients of fees and manipulation variables

Table 7 Regression analyses using the first earnings forecast issued

$$\text{Model: Diff} = \beta_0 + \beta_1 \text{Fees}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{Big4}_{it} + \beta_6 \text{Ins}\%_{it} \\ + \beta_7 \text{RET}_{it} + \beta_8 \text{ID}_{it} + \beta_9 \text{Manipulation}_{it} + \beta_{10} \text{Reverse}_{it} + \varepsilon_{it}$$

	Fees variable measured as non-audit fees ratio			Fees variable measured as non-audit fees or audit fee		
	2003		2004		2004	
	Parameter	t	Parameter	t	Parameter	t
Intercept	0.0440	2.23**	0.0547	2.64***	0.0723	2.37***
Non-audit fees ratio	-0.0329	-4.45***	-0.0074	-0.65		
Audit fees						
Non-audit fees						
Size	-0.0116	-0.58	-0.0743	-2.01***	-0.0227	-0.86
Leverage	-0.0485	-1.75**	-0.1061	-3.09***	-0.0017	-0.07
Loss	0.0045	0.44	0.0071	0.28	-0.0354	-1.09
Big4	0.0060	0.38	-0.0046	-0.35	-0.1501	-4.03***
Ins%	-0.0020	-0.13	-0.0040	-0.21	0.0357	2.17***
RET	0.00032	0.03	-0.0183	-1.3	-0.0032	-0.13
Industry	-0.0244	-2.87***	0.0080	0.79	0.0150	0.53
Manipulation ¹	0.7305	6.41***	0.2830	1.41	-0.0053	-0.24
Manipulation ²					-0.0169	-1.1
Revise	0.0367	4.8***	0.0342	4.07***	0.1954	0.46
N	37		37		0.6133	1.35*
Adj R ²	83.25%		62.86%		0.0442	3.47***
Test for coefficient equality [†]					0.0723	2.37***
					37	37
					58.19%	62.32%
					Audit fee (2003) = Audit fee (2004)	
					Non-audit fees (2003) = Non-audit fees (2004)	
					Manipulation ² (2003) = Manipulation ² (2004)	

Table 7 continued

Fees variable measured as non-audit fees ratio				Fees variable measured as non-audit fees or audit fee			
2003		2004		2003		2004	
Parameter	<i>t</i>	Parameter	<i>t</i>	Parameter	<i>t</i>	Parameter	<i>t</i>
<i>F</i> value	3.63* (Non-audit fees ratio)			0.05 (Audit fee)			
	4.01* (Manipulation ¹)			0.17 (Non-audit fee)			
				0.13 ^a (Manipulation ²)			
				1.38 ^b (Manipulation ²)			

Diff = the absolute value of difference between forecast and audited earnings, scaled by assets
Fees variable is defined as follows:
Non-audit fees ratio = 1 if non-audit fees divided by total fees is above the mean, and 0 otherwise
Audit fees = 1 if the natural log of the audit fees is above the mean, and 0 otherwise
Non-audit fees = 1 if the natural log of the non-audit fees is above the mean, and 0 otherwise
Size = the natural log of operating cash flow
Leverage = debt divided by assets
Loss = 1 if the firm reports loss in the observed year, and 0 otherwise
Big4 = 1 if the firm is audited by Big4 audit firms, and 0 otherwise
Ins% = ownership by institutional investors
RET = stock return minus market return
Industry = 1 if industry code is equal to 13, and 0 otherwise
Manipulation¹ = the absolute value of difference between forecast and un-audited earnings scaled by assets times non-audit fees ratio (dichotomous)
Manipulation² = the absolute value of difference between forecast and un-audited earnings scaled by assets times audit fees variable (a) and non-audit fees variable (b) respectively (dichotomous)
Revise = 1 if the firm revised its earnings forecast, and 0 otherwise
*, **, *** are significant levels at 0.1, 0.05, and 0.01, respectively (two-tailed)

† Tests/*F*-values for the difference in coefficients for fees and manipulation variables between 2003 and 2004

impairs their independence, as manifested by requiring less audit adjustment. Further, it indicates that auditor independence improved after the Procomp scandal. Using non-audit fees to replace the non-audit fees ratio in the regression analysis yields similar results. Sensitivity analyses using either a different firm sample or a different fee measurement method suggest qualitatively the same results. Additional analysis was performed in which the first earnings forecasts announced by management were used to calculate the difference between audited and forecast earnings. The results, after controlling for the effect of forecast error, are essentially the same.

These findings are consistent with the notion that auditors are faced with two types of incentives: gaining service fees and avoiding litigation and reputation loss. When the risk of litigation and reputation loss is not severe, they tend to behave as if they give more weight to service fees than to risk of litigation and reputation loss. Prior to the Procomp scandal, regulatory sanctions against auditors were inefficient because the procedures were prolonged and no civil lawsuit against auditors was successful. Investor protection was not effective, either. This legal environment provided auditors with little, if any, incentive to perform independently. However, immediately after the scandal broke out, the SFC efficiently sanctioned the auditors involved by suspending them from practice for 2 years. The Investor Protection Center also filed lawsuits against the auditors and audit firms. Our findings suggest that these unprecedented actions against auditors made auditors re-examine the balance between service fees and litigation/reputation risk when performing audit and non-audit services for the same clients. In fact, there is evidence that auditors became more careful and conservative in their handling of earnings reporting.

Our study contributes to the literature by proposing an alternative analytic approach. It takes advantage of the unique disclosure regulation in Taiwan that requires companies to publicly disclose audited and un-audited earnings forecasts, which are often difficult to obtain in other countries lacking such a requirement. This approach can directly reveal the magnitude of adjustment made by auditors apart from forecast error and management's attempt at earnings manipulation. In addition, to our knowledge, this study is the first to examine auditor behavior in Taiwan after the Procomp scandal. Although this event was local in nature, our study provides empirical evidence to support the general notion that changes in incentive structure will change auditor behavior. In addition, it has important implications for policy making. After the Enron scandal, auditors in the U.S. were barred from providing eight types of non-audit services to their audit clients. The Certified Public Accountants Law in Taiwan is currently undergoing amendment. The draft law proposes that auditors be proscribed from performing non-audit services for their audit clients whenever these non-audit services impair independence. Although the draft does not list specific non-audit services, as its U.S. counterpart does, the essence of the legislation is to prohibit non-audit services. Based on our findings, we believe that strengthening regulatory agency efficiency and enforcement of investor protection laws offer a better alternative. In fact, previous research indicates that providing both audit and non-audit services to clients can increase audit efficiency via knowledge spillover (Simunic 1984; Palmrose 1986). As economic agents, auditors themselves will naturally balance service fees against litigation risk and reputation loss.

The study has the following limitations. First, the sample in our study consists of companies that paid their auditors non-audit fees of at least NTD 500,000 (about USD 15,295), or an amount representing at least 25% of total fees. The question of whether the findings apply to other companies requires further study. Finally, our findings are based on the current institutional background in Taiwan; further research may examine auditor behavior after the passage of the amended CPA Law.

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Appendix

Procomp scandal

Procomp Informatics Ltd. (Procomp), which was incorporated in Taiwan in February 1991, was a manufacturer of PC-related and compound semiconductor products. A winner of the National Prize for Small and Medium Enterprises in Taiwan, Procomp was audited by KPMG (Taiwan) prior to and subsequent to being listed on the Taiwan Stock Exchange (TSE) on December 18, 1999. On March 9, 2004, the company made an announcement that it had switched its auditor from KPMG (Taiwan) to DTTI (Taiwan). The claimed reason was that KPMG (Taiwan) had provided audit services for Procomp for five consecutive years, which would impair auditor independence. Newspapers reported that, in fact, KPMG (Taiwan) had disagreed with Procomp on the amount of allowance for doubtful accounts since 2002, although KPMG (Taiwan) had still issued an unqualified opinion. In addition, it was claimed, Procomp's management "went opinion shopping" and selected DTTI (Taiwan) to replace KPMG (Taiwan) as the auditor for its financial statements of 2003 and the first quarter of 2004. DTTI (Taiwan) issued audit reports in 3 and 8 weeks, respectively, after accepting the engagement.⁷

On June 14, 2004, Procomp filed for re-organization after failing to raise funds through issuing GDR (Global Depositary Receipts) to redeem outstanding bonds, which were due. The amount due was about USD 92 million.⁸ A financial scandal broke out when it was revealed that the balance of cash and cash equivalents shown in the financial statements did not exist at all. The amounts were 162 million for the end of 2003 and 193 million for the first quarter of 2004, respectively. On the same day (i.e., June 14, 2004), its stock price closed at 26 cents, a 52% decline relative to 54 cents 1 year earlier. Trading in the shares was halted 11 days later. Tens of thousands of investors and creditors suffered huge losses. It was up to that point the biggest business scandal in Taiwan's history. The company was de-listed from the TSE 3 months later due to insolvency.

The Financial Supervisory Commission (FSC) immediately started an investigation. According to the FSC report, Procomp inflated the company's earnings by "making" falsified sales to paper companies in Hong Kong. Then, the company factored accounts receivables to banks in exchange for cash that was reported as cash and cash equivalent in the balance sheet, although the banks would restrict the use of cash if those accounts receivables were not collected. Therefore, the 193 million balance of cash and cash equivalents vanished. Additionally, the company did not really raise funds through the issuance of ECB in foreign countries. Instead, Procomp had its overseas companies subscribe to those bonds, convert them into the company's stocks, and sell them on the TSE

⁷ According to regulations in Taiwan, within 4 months following the close of each fiscal year, a listed company should disclose to the public its audited financial reports, and within 1 month after the end of the first (and third) quarter of each fiscal year, it should disclose to the public its reviewed financial reports.

⁸ The NT dollar to US dollar conversion rate used here is 32.69:1. In the following, we express amounts in US dollars.

for cash, but the proceeds ultimately flowed into top management's (the chairperson's and CEO's) personal pockets.

Shortly after the Procomp scandal emerged, a series of management fraud and accounting scandals were uncovered. For example, Infodisc Technology Co., Ltd, a CD and DVD manufacturer, failed to account for the whereabouts of 79 million of cash and cash equivalents. Summit Computer Technology Co., Ltd. was another case of the same nature. These companies were listed among electronics companies, as categorized by the TSE.

The FSC responded quickly by sanctioning both Procomp's former and incumbent auditors with suspension from practice for 2 years for not following generally accepted auditing standards during the audit process.⁹ The chairperson, president, CFO, and board of directors were all sued in accordance with the Securities and Exchange Law and Business Accounting Law. The chairperson was prosecuted and the prosecutor requested that she be sentenced to 20 years in jail and fined 15 million dollars. Meanwhile, the Investor Protection Center filed class action suits against the auditors, accounting firms and underwriters of the respective companies.

As of December 1, 2005, Procomp's accounting firms had agreed to pay 1.8 million each to settle out of court. The underwriters also agreed to reimburse investors for losses of 2.4 million. Though the amount is not material relative to the losses of investors and creditors, it was unprecedented high for Taiwan at the time.

The SFC took many additional actions to mitigate the expectation gap between investors and auditors, including mandatory auditor rotation, inspection of audit working papers, amendment of the CPA Law in Taiwan to proscribe auditors from providing non-audit services that could impair independence, and asking accounting firms to purchase professional liability insurances. A series of reforms were enacted so as to deter accounting abuses and avoid more Procomp-like disasters in the future.

Procomp and similar scandals were not associated with provision of non-audit services to audit clients. However, whether the SFC's sanctions and investors' legal actions against auditors increase auditors' litigation costs and hence incentives to maintain auditor independence is a critical issue, and we collectively refer to this possible effect on auditor behavior as the "Procomp effect".

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⁹ In Taiwan, two engagement partners must sign off on the audit report for an engagement.

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