Risk Premium Perspective-Audit Value of the Private Colleges and Universities in Taiwan

Yung-Yu Lai
Overseas Chinese Institute of Technology

Chiaju Kuo
National Taichung Institute of Technology

Chung-Jen Fu
National Yunlin University of Science & Technology

Abstract
This study features itself by collecting first-hand audit fee data from audited financial statements of private colleges and universities directly for the 2001-2003 academic years and partial for 1998-2000 academic years. From risk premium standpoint, the audit service value can be inferred that the greater intention the auditee are likely to commit fraud, the higher the audit service would be valued while the audit work can effectively prevent fraud occurrence. We defined fraudulent organization as the school has ever experienced defect. The results are consistent with our expectation, suggesting that there is a positive association between fraudulent organizations and audit fees after controlling variables Big 4, industry specialist, size and complexity of schools and audit risk. These findings show that audit service value is driven by how effective the audit work is conducted. It means, the more the fraudulent schools are detected, the greater the audited information as well as audit serviced are priced.

Keywords: Audit fees, private colleges and universities, non-profit organizations, risk premium
從風險貼水看私立大專院校審計服務價值

賴永裕
僑光技術學院

郭佳如
台中技術學院

傅鍾仁
雲林科技大學

摘要
審計公費研究之主要障礙在於審計公費之取得，與過去研究最主要不同之處，本研究直接取得私立大專院校 2001 至 2003 學年度由政府招標會計師查核財務報表之審計公費及 1998 至 2000 學年度部分學校審計公費。從風險貼水推論審計服務價值，當被審計組織舞弊傾向愈大時，若審計工作能有效遏阻舞弊發生，則審計資訊價值愈大。將曾經發生違失案件學校定義為有舞弊傾向組織。實證結果顯示曾出現違失學校，在控制了四大、產業專家、規模、風險、複雜度等可能影響因素後，結果與本研究推論一致，有舞弊傾向組織與審計公費呈正相關。當被審計學校存在舞弊傾向時會計師事務所的審計價值較高，當被審計組織舞弊傾向（高估機率）愈大時（愈不對稱時），且審計能有效遏阻舞弊之發生時，則審計之資訊價值愈大。

關鍵字：審計公費、私立大專院校、非營利事業組織、風險貼水
I. Introduction

Most of the researches on audit fees were based on theoretical models rather than empirical studies, because of the difficulty of data acquisition where most of the data were collected from questionnaires. In Taiwan, private colleges and universities have been emerging enormously in recent years due to the changing of higher education policy and special recognition and subsidies from government. At the same time, the supervision of financial affairs has become more important for the Ministry of Education (MOE, hereafter), owing to several financial scandals out-broken in private schools in recent years. Since there are enormous and complete studies on audit fee for profit organizations, Nonprofit Organizations (NPOs, hereafter), one of the three biggest organization systems in society, has not received a similar attention yet. Thorne et al. (2001), however, once tried to observe how auditing work had been priced for government. They examined whether audit fees would be charged differently for different audit engagements by using local governmental data collected from north California. Nonprofit Organizations (NPOs) cover a wide range from hospitals, foundations, churches, and schools to museums. In the 2006 census from the MOE there were 162 private colleges and universities (including 89 universities, 56 colleges and 17 junior colleges). Among them, 54 schools were public and the rest were private colleges and universities (including 48 universities, 46 colleges and 14 junior colleges). During last ten years, 25 colleges and universities were newly set up and student enrollment was sharply increased for more than half million. The total expenditure schools spent had enormously increased from 91.1 billion to 222.2 billion between 1993 and 2004, a growth rate reaching 143.84%. Amazingly, private schools’ expenditures which accounted for 38.9 billion in 1993 rose to 117.3 billion in 2002, an increase of 61.2%.

1. Research background

The MOE revised “Regulations for Establishments of Accounting Systems at Private Schools” on April 18, 2005. Of Article 12, "Private school should prepare the budget of next year at the beginning of the year, proved by board of directors and submit to Ministry of Education before July. At the end of the year, the financial statements should be audited, proved by board of directors and submit for reference before December.” Based on second provision of Article 3, " The MOE should set up rules for consist of governing accounting system of private colleges and universities”.

Following a financial crisis at Hualien Da-Han Industrial and Business College which took place in 1988 and an accounting scandal of Kaohsiung International Business College founded in 1990, the MOE adopted strict controls over financial operations of private colleges and universities. Since then, the MOE has required that the financial statements of private colleges and universities should be audited by audit
firms. Although the relevant policies regarding this issue had been amended several times through the years (see Table 1), a need for the audited financial statements to be submitted to and approved by the MOE are still remains unchanged.

**Table 1: The one who chose for the auditor or was responsible for the audit fees**

<table>
<thead>
<tr>
<th>Academic year</th>
<th>Auditor selector</th>
<th>Responsible party for paying audit fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>Private colleges and universities</td>
<td>Private colleges and universities</td>
</tr>
<tr>
<td>1995</td>
<td>Private colleges and universities</td>
<td>Half of the audit fees was subsidized by the MOE</td>
</tr>
<tr>
<td>1997</td>
<td>1. Private colleges and universities, or 2. assigned by the MOE</td>
<td>1. Private colleges and universities, or 2. the MOE when CPA was assigned by the MOE</td>
</tr>
<tr>
<td>2001</td>
<td>The MOE entrusted the special case to audit (Open tendering procedure)</td>
<td>The MOE</td>
</tr>
<tr>
<td>2003</td>
<td>The MOE entrusted the special case to audit (Limited tendering procedure)</td>
<td>The MOE</td>
</tr>
<tr>
<td>2004</td>
<td>Private colleges and universities</td>
<td>Private colleges and universities</td>
</tr>
</tbody>
</table>

As shown in Table 1, private colleges and universities have been found to have committed many collusions and corruptions from year 1997 until the present. The MOE, in order to promote auditor independence, encouraged private schools to be audited by auditors assigned by the MOE. During the academic years 1997-2000, the right to appoint auditors and the responsibility to pay for audit services left to schools or remained with the MOE, respectively. There were 9, 10, and 14 schools between academic year 1998 and 2000 that were audited by appointed firms, accounting for 10% of the whole. The way auditors were selected was soon changed for the sake of enhancing the qualifications of bidders since the biggest educational scandal happened in 2000. As a result, the auditors were selected through tendering procedures by the MOE who was responsible for audit fees from year 2001 to 2003. Since such practices represented different cost expenses, data adopted from these three years were sampled to study the determinants of audit fees.

---

2 Academic years of schools are different from those of firms. For example, academic year 1992 started from August 1, 1992 and went to July 31, 1993.
2. Research motivation and purposes

Most of the knowledge or experience of organizational management and audit are mainly obtained from profit organizations, and the mission and performance evaluation criteria of non-profit organizations are different from those of profit organizations. Thus, studies on managing non-profit organizations will of course face some obvious challenges. This study, therefore, focuses on audit services, factors affecting audit fees and fee premiums charged for better auditor brand name reputation, and the increase of fee premiums results from risk premiums.

Economists claim that the demand of audit service increase depending on the value (utility) that audit services can provide. In practice, despite competitive and strategic concerns, audit fees are mainly charged by a cost-plus method, which prices audit service from the supply point of view. For example, an auditor would price his/her service based on his/her client size, complexity and business risk. On the other hand, the examination of audit fee determination in academic audit studies mainly have focused on supply perspective and audit processes rather than demand perspective that is observed as well. Accordingly, this study will exam audit service value based on NPOs financial statement user’s concern under information hypothesis and risk premium hypothesis, and hopefully, a complete overview of audit fee determination can then be framed for non-profit organizations. Because of the difficulty of data acquisition, most of the prior researches on audit fees were done from the supply point of view rather than from the demand point of view demand. Our research is based on the information hypothesis in the viewpoint of demand by using the data of the fraudulent organizations. However, we have to employ the determinants of audit fees in the perspective of supply as control variables.

This study begins with an introduction to audit and audit background of NPOs. Then audit work as an economical service is assumed. Under this circumstance, we try to analyze in which way audit service is demanded. Also, an overview of agent, information and insurance hypotheses is outlined all at once. In addition, we based on information hypothesis exam risk premium, a proxy for audit service value from demand perspective. The hypotheses are empirically tested and the results are analyzed.
II. Literature Review and Research Hypotheses

Auditing is an accumulation and examination of a specific entity’s quantifiable information to decide and report which level of consistency between such information and established rules, so that it must be accomplished by competent individuals (Arens and Loebbecke, 1994). The major types of audits can be classified as financial audits, tax audits, operational audits and compliance audits. DeAngelo (1981) identified the pre-value of audit service as auditors having ability: (1) to discover errors or frauds in financial statements and (2) to resist the pressures from clients for a fair report on discovered errors and frauds. Watts and Zimmerman (1986) agreed with DeAngelo’s arguments and regarded the former as auditor’s professional skills whereas the later as auditor independence.

Most audits carried out for profit organizations are financial audits (or financial statement audits). A financial audit is to assess whether the information presented in the financial statements, taken as a whole, is in conformity with generally accepted accounting principles (GAAP). Basically, there are quite a lot of ways to evaluate the financial statement quality; however, it would be more efficient if the audit works are done by professional auditors rather than any of the individuals. Therefore, financial audits in the present economy society are usually conducted by independent auditors.

Recently, with more attention drawn on the performance of NPOs, an increasing need to promote the credibility and legality of those financial statements is obviously perceived, hence, the related audits have been performed by professional auditors hereafter. In accordance, the characters of audits for NPOs are a mixed result of financial audits and compliance audits. Compliance audits are audits to determine and report whether operations are being conducted in compliance with applicable laws and regulations, management policies and contracts. The sample used for this study consists of private colleges and universities that all have received financial support from governments. While the authorities are responsible for supervision in those schools, the spirit of entrusting audit works to professional auditors by the private colleges and universities is partially consistent with compliance audits.

The following sections will analyze the determinants of audit fees from both supply and demand perspectives, review literature on the subjects of auditor brand name premium and industry specialist and finally propose the main hypotheses.

Wallace (1980) pointed out that audit demand theory can be divided into agency theory, stewardship hypothesis, insurance hypothesis, information hypothesis and regulatory hypothesis. We describe information hypothesis briefly as follows:
As the user recognize the audited financial report will provide the better quality of information, information hypothesis assumed investor or debtor will ask for audited financial report for reducing risk, improve investment or debt policies and gain profit. Rational investors require audits for evaluating the market value by audited financial report, and making decisions based on such quality information. However, the quality of financial report information will be reduced due to intentional or unwilling mistakes or failures. As a result, management will appoint an independent auditor to maintain audit quality. The value of audit information for decision making is different from that of supervising value by agency theory.

The value of audit information can be divided into two parts. First, from the affordable risk part, audits will reduce the uncertainty of accounting information and increase its quality by reducing risk premium (assume investor is risk averter). Second, from the improving decision making part, audit information will provide better quality of accounting information for amending investors’ beliefs and results in better decision quality of selecting proper action. In NPOs, quality audit reports will gain trust from dominators or government organizations for more domination or financial support. The next chapter will use risk premium to analyze the value of audit service based on information hypothesis.

1. Determination of the Audit Value Under the Information Hypothesis

The auditors of the private colleges and universities were appointed by the MOE hence the Boards of such schools did not have the rights to choose auditors in the research period of the dissertation. Meanwhile, different from those of profit organizations, schools do not have the external agency relationship between managers and stockholders results from information asymmetry. The study does not focus on the agency theory in the demand perspective, accordingly. Insurance is originated from an underpinning that the investors’ losses could be covered from a claim for audit failure. Whether there is an audit failure and if it does give rise to the amount of losses that resulted, auditors are responsible for coverage to investors against losses suffered. However, the insurance hypothesis may not hold for the private colleges and universities because there are no investors who will claim for the losses to them. The study does not examine the insurance hypothesis, neither.

Fu (1997) set up the model of audit value as for profit organizations in the perspective of risk premium. However, Fu (1997) did not verify the model by empirical research, because of the difficulty of data acquisition. Fu’s (1997) study was focused on the agency theory, the insurance hypothesis, and the information hypothesis. This research differs from Fu’s (1997) study in the ways that:
(1) Organizations’ goals are different. Fu (1997) explored the model of the profit organizations, which with the goal of profit making, whereas the main purpose of the NPOs is to engage themselves in related charitable activities.

(2) Outside stakeholders are different. The main outside stakeholders of the profit organizations are investors and stockholders, whereas those of the NPOs are donors and the Supervisory Authorities.

(3) The insurance hypothesis may not hold. There are no investors who will claim for the losses to the NPOs. In addition, the MOE regulates that private schools’ loan taking has approved by the authorities and no assets of schools can be provided as mortgage. Therefore, insurance hypothesis may not hold for the private colleges and universities.

Take the audit value of a certain NPO’s (e.g., university α’s) audited financial statements for example in the perspective of the information hypothesis, Fu’s (1997) model can be modified as follows:

Basic assumptions:

To simplify the analysis, assume there are two persons (A and B), two states (overestimate and underestimate), and two policies (audit or not). A is the chairman of the board of university α, and A considers not only to disclose α’s financial statements which represent its operation results but also to raise funds from outsiders and to strive for the subsidies. B is a potential donor, the Supervisory Authorities, or a subsidy institution of the government. Both A and B agreed that the amount of donation or subsidy is based on the operation results of university.

A has run the university for years and knows that the book value of α’s operation performance equals to the expected value W when the financial statements are fully disclosed. Suppose $W \alpha'$ is intrinsic value. Assume that prior to audit, $\alpha'$s book value based on its accounting system can be overestimated or underestimated. Suppose the probabilities of overestimate and underestimate is 1/2, respectively. That is, $\alpha'$s book value is $W + Z$ prior to the audit, where $Z$ is a random variable. $Z$ could mainly be overestimated ($+Z$) or underestimated ($-Z$) when there is no symptom of a fraud (However, such assumption will be relaxed when there is a tendency to commit a fraud.) $W + Z$ denotes $\alpha'$s book value is overestimated.

---

3 Accounting earnings are generally different from economic earning; hence, the book value is not equal to the intrinsic value. For simplicity, the authors assume that the book value is equal to the intrinsic value when $\alpha'$s financial statements are fairly disclosed.

4 Assume that the probability of overestimate, p, equals to 1/2 at this point and the common situations which $p > 1/2$ will be discuss in the followings. As for the analysis of rare situations when $p < 1/2$, which is similar to that when $p > 1/2$, the author will not give a further description on it.
whereas $W - Z$ denotes underestimated.

Assume both $A$ and $B$ are risk aversors (expressed as RA, hereafter) and their utility function $[U(W)]$ is the expected utility function of Von Neumann and Morgenstain. Where $U'(W) > 0$ and $U''(W) < 0$. Let $\pi$ be the risk premium, which is the highest cost $A$ (or $B$) will spend to eliminate the original uncertainty. Then, $E(U) = U(W - \pi)$, which is shown in Figure 1.

Pratt (1964) applied Taylor series expansions of $U(W - \pi)$ and $E[U(W + Z)]$ at point $W$, respectively, and let the results be equal. $\pi^2 \to 0$, as $\pi$ is quite small, so we have the value of the risk premium (Arrow-Pratt Index of Risk Aversion) as follows:

$$\pi = - \frac{\sigma^2}{2}(U''/U')$$

where $\sigma^2$ is the variance of random variable $Z$. That is, the variance of the university’s book value with regard to the operation performance.

DeAngelo (1981a) defined the ex ante audit value as that: (1) CPAs have the ability to detect misstatements or frauds in the financial statements, and (2) CPAs have the ability to report the misstatements or frauds truthfully under the tress of the clients. Meanwhile, audit value depends on the product of these two probability density functions. The information value of audit explored in the dissertation can be treated as the ex ante value. Firstly, basic situations under which the NPOs do not have the tendency to commit a fraud (i.e., not only the amounts but also the probabilities of overestimate or underestimate are equal, respectively) are analyzed. Assume the book value with respect to the operation performance of an university prior the audit is $W + Z$ or $W - Z$, which with the probability of $1/2$, respectively. The audit services will not change an organization’s operations significantly. That is, audit services will change the distribution of the amount in the financial statements, thus results in the smaller variance ($\sigma^2$) of the university’s book value with respect to the operation performance. When the distribution of the expected value of amounts in the financial statements is symmetric, it turns to be $(W \pm sZ)$, where $0 < s < 1$. Secondly, situations under which the NPOs have the tendency to commit a fraud are examined. That is, when the distribution of the expected value of amounts in the financial statements is asymmetric (e.g., amount of overstatement $(2Z)$ is bigger than that of understatement $(Z)$, or probability of overstatement $(p > 1/2)$ is larger than that of understatement), the expected value will change after the audit. Audit value as related the situation when the client has no intention to commit a fraud is discussed first.

---

5 The general assumption related utility function is (1) power function: $U(W) = -W^a$, $a > 0$; (2) quadratic form: $U(W) = aW - bW^2$; or (3) exponential function: $U(W) = -e^{-aw}$, $a > 0$ (Datar et al., 1991, JAE).
Audit value of reduction in material misstatements—information value of audit services under symmetry distribution

First of all this section is focused on the audit value of reduction in material misstatements with regard to accounting information when there is no tendency to commit a fraud. In other words, the chance that audit may reduce material misstatements result from financial statements when there is no tendency to commit a fraud. The effects of audit on \( A \) and \( B \) can be analyzed as follows. In the view of \( A \), he/she knows that \( \alpha 's \) book value of the actual operation performance (i.e., book value under the circumstances of fully disclosed) should be \( W \), whereas he/she is not sure what will be the value calculated by the accounting system. Therefore, we suppose that \( A \) has no intention to manipulate earnings. Then, there are two possibilities as related \( \alpha 's \) book value calculated by the accounting system: (1) overestimate \( (W + Z) \); or (2) underestimate \( (W - Z) \), where not only the amounts but also the probabilities of overestimate or underestimate are equal, respectively. Then, \( A \)'s expected utility and risk premium \( (\pi) \) can be shown in Figure 1.

**Figure 1** The expected utility and risk premium prior to the audit

**Figure 2** The expected utility and risk premium after the audit

Assume the utility function of \( A \) is \( U(W) \), and \( U'(W) > 0; U''(W) < 0 \). Then the utility function of \( A \) will be

\[
E(U) = (1/2)[U(W+Z) + U(W-Z)]
\]

(1)

where the risk premium, \( \pi \), denotes the highest cost \( A \) will spend to fully eliminate the uncertainty prior to the audit.\(^6\) That is, the horizontal difference between point \( C (U(W - \pi)) \) and point \( D (E(U)) \).

\(^6\) Theoretically, \( A \) can reach the objective of full risk-aversion through the contingent claim under different circumstances in a complete market, whereas such objective is hard to reach in the real world.
Under the circumstances, $A$ may hire a CPA to render audit services. Assume that the audit can lower down the ratio of overestimate (underestimate) and raise the quality of accounting information (i.e., the variances become smaller) whereas it can not change an organization’s operations (i.e., the expected value remains unchanged).

Assume that there are still two possibilities as related $A$’s book value after the audit: (1) slightly overestimate ($W + sZ$); or (2) slightly underestimate ($W - sZ$), where the probabilities of the outcome are still the same, which are 1/2, respectively, and $0 \leq s \leq 1$. Hence, $s$ denotes the ability that audit services may bring to raise up the quality of accounting information. When $s = 0$, it indicates that audit service can totally eliminate the uncertainty of accounting information. On the contrary, when $s = 1$, it indicates that audit services cannot raise up the quality of accounting information.

Example 1: Let $s = 1$. Then $A$’s expected utility function $E(U)$ and risk premium $\pi^a$ are presented in Figure 2 and can be formulated as:

$$E(Ua) = (1/2)[U(W + (1/2)Z) + U(W - (1/2)Z)]$$

(2)

As the same reason, the risk premium, $\pi$, denotes the highest cost $A$ will spend to fully eliminate the uncertainty prior to the audit. That is, $E(Ua) = U(W - \pi^a)$ which is the horizontal difference between point C’ and point D’ as shown in Figure 2.

Hence, audit value can be expressed as: $Va = \pi - \pi^a$. $A$ will hire a CPA to render the audit services as long as the audit value is higher than the audit cost ($\xi$).

Observation 1: Ceteris paribus, the higher the quality of the audit, the higher is the information value of the audit.

Proof. Because $U(W)$ is a strictly increasing function ($U' > 0$, $U'' < 0$), there is an inverse function of $U(W)$.

Let $U^{-1}$ be the inverse function of $U$. It is obvious that $U^{-1}$ is an increasing function, too. The smaller the $s$, the smaller is the $\pi^a$, hence the higher is the information value of the audit ($Va = \pi - \pi^a$).

It can be presented as the following notations:

\[ W - \pi = U^{-1}(E(U)), \quad W - \pi^a = U^{-1}(E(Ua)), \text{ and } E(U) < E(Ua), \]

Both $U$ and $U^{-1}$ are increasing functions: $U^{-1}(E(U)) < U^{-1}(E(Ua))$.

\[ W - \pi < W - \pi^a, \quad Va = (\pi - \pi^a) > 0. \]

As the same reason, given any $0 \leq s_1 < s_2 \leq 1$, then $E(U s_1) > E(U s_2)$.

---

7 It can be presented as $[W \pm (1-s)Z]$, where $s$ denotes the reduction percentage as for the uncertainty of accounting information results from the audit services.
\[ W - \pi s_1 > W - \pi s_2, \quad V s_1 = (\pi - \pi s_1) > V s_2 = (\pi - \pi s_2). \]

**Deduction 1**: Ceteris paribus, the higher the reputation of the CPA firms (CPAs, hereafter), the higher is the CPAs’ information value when the CPAs’ reputation may represent for the audit quality (i.e., reputation is a strictly increasing function of audit quality or is a strictly decreasing function of \( s \)).

**Explanation**: Because audit quality is hard to be measured, users of audit information judge audit quality by the CPAs’ reputation in practice. Owing to reputation is hard to be measured researchers use the CPAs’ size as a proxy for reputation in the empirical studies. DeAngelo (1981b) is the first one who used the size of the CPAs as a proxy for reputation. The results of Simunic and Stein (1987) support for DeAngelo’s (1981b) argument. Chang et al. (2005) after canceling the audit fee floor, brand name reputation of auditors enlarges their range of excess market share. Consequently, the strategies of brand name reputation and industry specialization can successfully help auditors to respond to the increasing competition in audit market. The following hypothesis is developed accordingly:

**H1**: Big 4 auditors will have higher audit fees than non-Big 4 auditors, ceteris paribus.

**Observation 2**: Ceteris paribus, the higher the variance of the book value \((\sigma_z)\) results from poor internal control of the client or increase in its operation risk, the higher is the information value of the audit.

**Proof**: The risk premium \( \pi = -(\sigma^2/2)(U''/U') \). The utility function of users of audit information, \( U(W) \), becomes more concave and \( \pi \) becomes larger when the level of their risk aversion\((-U''/U')\) becomes higher. Meanwhile, the larger is \( \pi^a \). But \( \Delta \pi^a = f(\pi) \cdot \Delta \pi \) and \( 0 \leq f(\pi) \leq 1 \).

Therefore, \( \Delta Va = \Delta \pi - \Delta \pi^a = (1 - f(\pi)) \cdot \Delta \pi \geq 0 \).

The variance of the book value, \( \sigma_z \), will increase to \( \sigma^2 \) (\( \sigma^2 > \sigma^2 \)) when internal control of the client is poor or when its operation risk increases. Then the risk premium increases from \( \pi \) to \( \pi_d \), where \( \pi_d \geq \pi \), and then the information value of the audit can be formulated as: \( V_d = \pi_d - \pi^a > V_a = \pi - \pi^a \).

**Deduction 2**: In the perspective of the demands, the ceiling of the audit fees may become lower when the client, that is, the college or the university been audited, reduces its operation risk by enhancing its internal control, hedge effectively, or managing the assets and liabilities properly.

**Explanation**: Furthermore, in the perspective of the supply, audit costs are relatively lower as for a university whose internal control is good hence the ceiling of the audit fees may be relatively lower. Auditors will keep thinking about other measures.
as proxy for auditee’s risk in deciding audit fees while the importance of auditee’s risk is noted by both profession and in auditing texts. The following hypothesis is developed accordingly:

H2: The more risky the private colleges and universities, the higher the audit fees, ceteris paribus.

By controlling for ratio of debt to total assets, an increase in ratio of interest expenses to net income is found. It means that a positive relationship between NPOs’ risk and audit fees. Once NPOs have achieved better performance, a consequent effect of more donations from the publics and greater financial supports from the governments are obtained, in turn that brings about a positive image for NPOs. What's more, high ratio of net income to total ordinary revenues represents the steady financial structure of an organization that leads to its operational risk at a low level. These measures have an entire negative impact on risks faced by NPOs, showing that private donation, government financial support and ratio of net income to total ordinary revenues are negatively connected with audit fees. We use board expenditures as a proxy for the soundness of the corporate governance with regard to the private colleges and universities. The more effective the operations of the NPOs, the better is the corporate governance, hence the higher is the related board expenditures. Therefore, we expect there is a negative correlation between board expenditures and audit fees.

**Audit value of reduction in frauds—information value of audit services under asymmetry distribution**

Next, in the perspective of $B$ who is a donor or a subsidy of the NPOs, his/her utility will decrease when assets of such donation have not been used efficiently by the NPOs whereas will increase when assets of such donation have been used efficiently by the NPOs and hence increase the probability of further donations by $B$. As for the literature of the profit organizations, Kinney and Martin (1994) pointed out that the financial statements those without audit show a tendency to overstatement after they had analyzed a lot of auditing literature. $B$ wants to avoid such risk through financial audit because he/she doesn’t know $\alpha$’s intrinsic value. Assume that audit can lower down not only variances of the numbers in the financial statements but also the magnitude of overestimate of assets’ book value (frauds), hence avoid losses in the future.

Example 2: Following the deductions above, assume there are two possibilities as related $\alpha$’s book value prior to the audit: (1) overestimate ($W+dZ$); or (2) underestimate ($W-Z$), where $d \geq 1$, and the probabilities of overestimate or
underestimate are equal whereas the distribution is asymmetry.\footnote{The general form is (W-Z, W+aZ). The research applies the special case that \( a = 2 \).} Firstly, let \( d=2 \), then when \( B \) denotes based on the value of \((W+2Z)\), he/she will have the utility as that of \((W+Z)\) though paid more by the amount \( 2Z \). \( B \)'s expected value of wealth in the following period will be \((W-2Z)\). On the contrary, when \( B \) denotes based on the value of \((W-Z)\), \( B \)'s expected value of wealth in the following period will be \((W+Z)\). Therefore, \( B \)'s expected utility prior to the audit can be formulated as follows:

\[
E(U_b) = \frac{1}{2}[U(W+Z) + U(W-2Z)] < E(U) = U(W-\pi) \quad (3)
\]

where the risk premium, \( \pi^b \), denotes the highest cost \( B \) will spend to fully eliminate the uncertainty prior to the audit. That is, the horizontal difference between point \( C(U(W-\pi)^b) \) and point \( D(E(U)) \).\footnote{The risk premium, \( \pi^b \), includes not only the difference between expected wealth \((1/2)[(W+Z)+(W-2Z)]\) \((1/2)[(W+Z)+(W-2Z)]\) and certainty equivalents \((W-\pi)\), that is \((CD^\ast)\), but also the expected loss results in potential overestimate of assets' book value(D'D).}

Figure 3 The \( E(U) \) and \( \pi^b \) prior to the audit when there is a tendency to commit a fraud

Figure 4 The \( E(U) \) and \( \pi^a \) after the audit when there is a tendency to commit a fraud

Under the circumstances \( B \) may ask \( A \) to hire the CPA to render audit services, or \( A \) will hire the CPA on his/her own initiative under the efficient market hypothesis of (Jensen and Meckling, 1976). Assume that audit can both raise the quality of accounting information (i.e., let the variances become smaller) and reduce the probability of overestimate of the' assets (i.e., change the expected value). Assume that there are still two possibilities as related the book value after the audit: (1) slightly overestimate \((W+sZ)\); or (2) slightly underestimate \((W-sZ)\), where the probabilities of the outcome are still the same, which are 1/2, respectively, and \( 0 \leq s \leq 1 \).
Example 3: Let \( s = 1/2 \). Then \( B' \)'s expected utility function after the audit can be formulated as:

\[
E(U_{b'}) = (1/2)[U(W + sZ) + U(W - sZ)]
\]  

(4)

As the same reason, \( B' \)'s expected utility and risk premium prior to and after the audit are shown in Figure 3 and Figure 4, respectively, and the value of audit services as for \( B \) is \( V_b (\pi^b - \pi^d) \). Assume when the utility functions of \( A \) and \( B \) are the same (or the same person in different situations), \( \pi^b > \pi \) and \( V_b > V_a \) when \( a > 1 \) as presented in the Figures. Under the circumstances, audit value will be higher than that under the situation of symmetry distribution.

Deduction 3A: Ceteris paribus, compared to that of the aforementioned symmetry distribution, the higher the probability of the client has a tendency to commit a fraud (the larger the magnitude of symmetry of the amount of overestimate or underestimate) and the audit can prevent the fraud efficiently, the higher is the information value of the audit.

Proof: The risk premium increases from \( \pi \) to \( \pi^b \) when the client has a tendency to commit a fraud. Where \( \pi^b \) includes not only the difference between expected wealth and certainty equivalents \( (W - \pi) \), that is \( \pi^b \), but also the expected loss results in overestimate of assets’ book value \( (D'D) \). The higher the probability of the client’s tendency to commit a fraud the larger are \( \pi^b \) and \( D'D \) shown in Figure 4. The information value of the audit \( V_b = \pi^b - \pi^d \) is higher when the audit can prevent the fraud efficiently.

Those private colleges and universities who the school has ever experienced defect are thought to have a higher tendency to commit a fraud. Thus, information value of the audit will be higher when the audit can prevent the fraud efficiently. In practice, not only the magnitude of overestimate is relatively larger than that of underestimate as aforementioned but also the probability of overestimate is higher than that of underestimate mostly. The assumption, that both the probabilities of overestimate and underestimate are equal, will be relaxed to explore the situations under which the probability of overestimate is higher than that of underestimate whereas the magnitudes of both overestimate and underestimate are the same in the following analysis. As for the analysis of situations under which both the probability and magnitude of overestimate are higher than those of underestimate, which is merely the combination of the aforementioned two situations, the author will not give a further description on it.

Example 4: Assume there are two possibilities as related the book value prior to the audit: (1) overestimate \( (W + Z) \), which with the probability of \( p \), where \( p > 1/2 \); or (2) underestimate \( (W - Z) \), which with the probability of \( (1 - p) \), where \( (1 - p) < 1/2 \).
At first, let \( p = \frac{3}{4} \) and then \( B \)'s expected utility can be expressed as follows:

\[
E(U_{b''}) = (1/4)U(W + Z) + (3/4)U(W - Z) < E(U) = U(W - \pi)
\]  

(3)

where the risk premium, \( \pi_{b''} \), denotes the highest cost \( B \) will spend to fully eliminate the uncertainty prior to the audit. That is, the horizontal difference between point \( C \) (\( U(W - \pi_{b''}) \)) and point \( D \) (\( E(U) \)) as shown in Figure 3a.\(^{10}\)

Assume that audit can not only increase the quality of accounting information (lower down the variance) but also eliminate the overestimate of assets' book value (\( p \) decreases from \( \frac{3}{4} \) to \( \frac{1}{2} \)). Suppose that there are still two possibilities as related the book value after the audit: (1) slightly overestimate (\( W + sZ \)); or (2) slightly underestimate (\( W - sZ \)), where the probabilities of the outcome are still the same, which are \( \frac{1}{2} \), respectively, and \( 0 \leq s \leq 1 \).

Let \( s = \frac{1}{2} \). Then \( B \)'s expected utility function after the audit can be expressed as:

\[
E(U_b) = (1/2)[U(W + sz) + U(W - sz)] = E(U_a)
\]  

(4a)

As the same reason, \( B \)'s expected utility and risk premium prior to and after the audit are shown in Figure 3a and Figure 4a, respectively, and the value of audit service as for \( B \) is \( V_{b''} \) (\( \pi_{b''} - \pi^a \)). Assume when the utility functions of \( A \) and \( B \) are the same (or the same person in different situations), \( \pi_{b''} > \pi \) and \( V_{b''} > V_a \) when \( p > \frac{1}{2} \) as shown in the Figures. Under the circumstances, audit value will be higher than that under the situation of symmetry distribution.

\(^{10}\) The risk premium, \( \pi_{b''} \), includes not only the difference between expected wealth[(1/4)(\( W + Z \)) + (3/4)(\( W - Z \))] and certainty equivalents (\( W - \pi_{b''} \)), that is(CD”), but also the expected loss results in potential overestimate of assets’ book value(D”D).
**Deduction 3B**: Ceteris paribus, compared to that of the aforementioned symmetry distribution, the higher the probability of the client has a tendency to commit a fraud (the larger the magnitude of symmetry of the amount of overestimate or underestimate) and the audit can prevent the occurrence of fraud efficiently, the higher is the information value of the audit.

**Proof**: The risk premium increases from $\pi$ to $\pi^b$ when the client has a tendency to commit a fraud. Where the risk premium, $\pi^b$, includes not only the difference between expected wealth and certainty equivalents ($W - \pi^b$), that is, $(\text{CD}^a)$, but also the expected loss results from overestimate of assets’ book value(D”D). The higher the probability of the client’s tendency to commit a fraud the larger is $\text{CD}^a + \text{D"D}$ shown in Figure 3a. The information value of the audit ($V^b = \pi^b - \pi^a$) is higher when the audit can prevent the occurrence of frauds efficiently.

To sum up the above deductions 3A and 3B, those private colleges and universities who the school has ever experienced deficit are thought to have a higher tendency to commit a fraud. Thus, information value of the audit will be higher when the audit can prevent the fraud efficiently. The following hypothesis is developed accordingly:

H3: Ceteris paribus, the value of audit services can be inferred that the greater intention the auditee are likely to commit fraud, the higher the audit service would be valued while the audit work can effectively prevent fraud occurrence.

2. **Control Variables**

Since 2000, the MOE has forced the private colleges and universities to hold open tendering procedures for their auditor selections. Compared with the hypotheses proposed from the demand viewpoint for profit organizations, the hypotheses proposed from the supply viewpoint are relatively fewer; for example, neither agency theory nor insurance hypothesis can be possibly applied. We will discuss the determinants of audit fees from the supply perspective.

(1) **Decisive factors of market structure**

Simunic (1980) constructed an empirical model to examine the determinants of audit fees. He found that factors related to (1) client size, (2) client complexity, (3) specific items in the balance sheet (e.g., accounts receivable and inventory), (4) client industry and (5) if client publicly traded were significant in explaining the level and variability of audit fees. Afterwards, the scholars from many countries duplicated his model to test the determinants of audit fee variability. In all, those five variables were said again to explain the majority of variations within audit fees (e.g., Palmrose 1986; Anderson and Zeghal 1994; Craswell et al. 1995; Simon 1988). Lin (1997) aimed to generate audit fee models for listed companies in Taiwan. The results showed that client
size (total assets), client complexity (the diversity of services provided for clients), audit risk (return on assets) and audit firm reputation were significantly related to audit fee variability.

The MOE has assigned auditors to and priced audit services for the private colleges and universities based on school’s type and open tendering procedures exercised since 2001. Because the fiscal year of schools ends in August that differs from general profit organizations, most audit firms can make good use of their idle capacities to provide financial audits for private colleges and universities, and there were expectations that competition among audit firms would be very vigorous. The MOE started hiring auditors to audit private colleges and universities through open tendering procedures between in the academic years 2001 and 2002. Such procedures reflect perfect competition among audit markets. The MOE soon restricted bidders qualifications in 2003 for the sake of enhancing auditors’ abilities, the limited tendering procedures therefore were adopted to decide auditors and audit fees. Audit markets with the rigidity characteristics may be pertinent to oligopoly positions. In comparison, sizes and levels of competition from limited tendering procedures will be less than those from open tendering procedures expectedly.

(2) Costs of audit firms—client size

The larger the clients, the greater the number of individual elements comprising the accounting systems as well as the greater the required number of formal control activities and thus the greater amount of input hours, audit efforts and audit fees that are required. As suggested in the previous literature, the variable of total assets was adopted to measure client size and was significant in explaining audit fee variability in the cross-sectional studies (Simunic 1980; Francis 1984; Craswell et al. 1995). Chow (1982) applied agency theory to observe the motivations that companies appoint auditors. The results indicated that the client size appeared to be vital in explaining why managers had requested for audit services. In accordance, greater audit costs would be paid when more audit efforts need to be expanded for the large clients. Likewise, higher audit fees would be charged for private colleges and universities which are perceived to be larger. Therefore, this study uses NPOs’ total assets as a proxy for size of client to control the effects of client size on audit fees.

(3) Costs of audit firm—client complexity

Compared with profit organizations or subsidiaries, private colleges and universities have subsidiaries (eg., hospital or kindergarten) in operation that will request for more audit services and time as typical school operations and subsidiaries are totally different from each other. Therefore, the complexity of the client is positively
correlated to the audit fees charged by the auditor. In addition, it can usually be seen that the organization of a university tends to be larger and more complex compared to a college so that the university has greater potential and more opportunities to acquire proposed projects and to develop continuous education than do most colleges. The current study also conjectures that a university will be charged higher audit fees than a college. As discussed above, two variables UNIV and OPP/TA are used to measure client complexity.

III. Sampling and Modeling

This section explains data sources, the basic characteristics of audit fees, the determinant factors of audit fees, the audit service value when fraud inclination is detected by audit organizations.

1. Sampling

The data of this research comes from the CPA firms appointed by the MOE to audit private universities and junior colleges during the period of the 1998 and 2002 academic years. Audit fees and audit CPAs were obtained from the MOE directly via legislators. The audit fees for the 2003 academic year were obtained from the announcements after CPA association public bidding. Therefore, the audit fees obtained for this study are more accurate and complete, compared to prior relevant research (Chen 2000). Moreover, according to the regulation in ‘The Must-Dos list for CPA auditing the Financial Statements of Junior Colleges and above’, Article 6: service fees are limited to the audit fees on financial statements. The financial statements of private universities and junior colleges were manually collected from the website of each school.

During the period of 1998 and 2000, the private universities and junior colleges being audited by the MOE appointed CPA firms were 9, 10 and 14 schools for each year. 8 universities, whose CPA firms remained the same for 3 consecutive years. Table 2 lists the raw audit fees information. We conducted small sample mean t-test for the differences of audit fees in the previous and for the years following years (untabulated), namely, the 1998 and 1999 academic years, as well as the 1999 and 2000 academic years. The results indicate that the audit fees of the following year are significantly higher than that of the previous year. This implies that there is an increasing trend of audit fees when the MOE appoints CPA firms to audit schools’ accounts by negotiation.

Table 3 lists the audit fees of the MOE appointed CPA firms and public bidding CPA firms during the 2001 and 2003 academic years. The data shown in the table is expected to be more accurate than using a questionnaire as done in the previous literature. It is obvious to see from the table that the means of audit fees were not too
different from each other in the 2001 and 2002 academic years; however, the audit fees in the 2003 academic year were significantly higher than that of the previous two years.

Table 2 Audit Fees of Universities and Junior Colleges from the MOE Appointed CPAs during the 1998 through 2000 Academic Years (expressed in New Taiwan dollars)

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>MOE appointed CPAs to Audit Schools</th>
<th>Same CPA audits for 3 Consecutive years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Obs.</td>
<td>Mean</td>
</tr>
<tr>
<td>1998</td>
<td>9</td>
<td>388,889</td>
</tr>
<tr>
<td>1999</td>
<td>10</td>
<td>563,000</td>
</tr>
<tr>
<td>2000</td>
<td>14</td>
<td>613,714</td>
</tr>
</tbody>
</table>

Table 3 Audit Fees of Universities and Junior Colleges by MOE Appointed Project CPAs (expressed in New Taiwan dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Obs.</th>
<th>Min</th>
<th>Mean</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>101</td>
<td>142,500</td>
<td>293,350</td>
<td>850,480</td>
<td>128,495</td>
</tr>
<tr>
<td>2002</td>
<td>101</td>
<td>142,500</td>
<td>292,237</td>
<td>830,000</td>
<td>126,863</td>
</tr>
<tr>
<td>2003</td>
<td>100*</td>
<td>175,000</td>
<td>448,936</td>
<td>775,000</td>
<td>167,036</td>
</tr>
</tbody>
</table>

*there were 104 private universities and junior colleges in 2003 academic year, with 4 schools’ audit fees unavailable.

2. Modeling

According to the inference of audit service value from demand side, when the fraud inclination detected by audit organization is greater (over- or under- estimated values tend to be more asymmetry), if audit can avoid the occurrence of fraud effectively, the audit service value will be greater. We define schools that have fraud in the current year and the subsequent years as the ‘fraud-inclination organization’ (FRAUD = 1). According to media reports and the official documents from the MOE, we found that when schools once commit the fraud, the MOE will appoint project CPA to audit schools’ financial statements. When schools are back to normal operation, they will then invite public bidding to decide CPA appointment and audit fees. Due to data availability, we have only obtained 30 schools as the sample in the period of 1998 to 2000 academic years, of which 21 schools have frauds, and were therefore being
appointed CPA firms by MOE. As the way of determining CPA firms is different from that of 2001 to 2003 academic years, we utilize the 332 sample schools in the period of 1998 to 2003 to do the empirical analysis. We also delete the sample in the period of 1998 and 2000, this left with 302 sample schools to do the robustness test. The model is constructed as follows:

Sample schools in the period of 1998 to 2003:

\[
LNAU_i = a + d_1 \text{YEAR03}_i + d_2 \text{YEAR02}_i + d_3 \text{YEAR00}_i + d_4 \text{YEAR99}_i + d_5 \text{YEAR98}_i + b_1 \text{FRAUD}_i + b_2 \text{BIG4}_i + b_3 \text{LNASSET}_i + b_4 \text{DEBT}_i + b_5 \text{INT/EARN}_i + b_6 \text{BOARD}_i + b_7 \text{DENOTE}_i + b_8 \text{SUBSIDY}_i + b_9 \text{9EARN}_i + b_{10} \text{UNIV}_i + b_{11} \text{OPP/TA}_i + \epsilon_i \tag{1}
\]

Sample schools in the period of 2001 to 2003:

\[
LNAU_i = a + d_1 \text{YEAR03}_i + d_2 \text{YEAR02}_i + b_1 \text{FRAUD}_i + b_2 \text{BIG4}_i + b_3 \text{LNASSET}_i + b_4 \text{DEBT}_i + b_5 \text{INT/EARN}_i + b_6 \text{BOARD}_i + b_7 \text{DENOTE}_i + b_8 \text{SUBSIDY}_i + b_9 \text{9EARN}_i + b_{10} \text{UNIV}_i + b_{11} \text{OPP/TA}_i + \epsilon_i \tag{2}
\]

Where,

- **LNAU**: log of audit fees.
- **YEAR03**: dummy variable, 2003 academic year takes the value of 1, 0 otherwise.
- **YEAR02**: dummy variable, 2002 academic year takes the value of 1, 0 otherwise.
- **YEAR00**: dummy variable, 2000 academic year takes the value of 1, 0 otherwise.
- **YEAR99**: dummy variable, 1999 academic year takes the value of 1, 0 otherwise.
- **YEAR98**: dummy variable, 1998 academic year takes the value of 1, 0 otherwise.
- **FRAUD**: dummy variable takes the value of 1 when schools have fraud, 0 otherwise.
- **BIG4**: dummy variable, proxy for audit quality, if audited by big-4, then it takes the value of 1, 0 otherwise.
- **LNASSET**: log of total assets of private universities and junior colleges, proxy for size.
- **DEBT**: the ratio of debt to assets, proxy for risks.
- **INT/EARN**: interest expenses divided by current net income/loss, proxy for risks.
- **BOARD**: the ratio of board expenditures to current revenue, proxy for risks.
- **DENOTE**: the ratio of personal donation to current revenue, proxy for risks.
- **SUBSIDY**: the ratio of subsidy to current revenue, proxy for risks.
- **EARN**: the ratio of current earnings to current revenue, proxy for risks.
- **UNIV**: if university, it takes the value of 1, 0 otherwise; proxy for complexity.
- **OPP/TA**: the ratio of operating fund to total assets, proxy for complexity.

We employ multi-regression to empirically test the determent factors of audit fees in non-for-profit organizations, i.e., to test hypothesis 1 to 2: the impact of audit quality and risks. The authors expect that when organizations tend to commit a fraud, the
coefficient $b_1$ will be positive. This would indicate that the audit value of the audited organizations inclined to commit a fraud will be higher, and thus verify the inference of the demand side of audit service. In a word, when the fraud inclination (over-estimated probability) of the audited organization is higher (more asymmetry), and when audit can effectively avoid the occurrence of fraud, the information value of audit is greater. This can then be adopted to examine hypothesis 3.

Expected Empirical Results:

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Hypotheses</th>
<th>Expected Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR03</td>
<td>Control variable</td>
<td>+</td>
</tr>
<tr>
<td>YEAR02</td>
<td>Control variable</td>
<td>?</td>
</tr>
<tr>
<td>YEAR00</td>
<td>Control variable</td>
<td>?</td>
</tr>
<tr>
<td>YEAR99</td>
<td>Control variable</td>
<td>?</td>
</tr>
<tr>
<td>YEAR98</td>
<td>Control variable</td>
<td>?</td>
</tr>
<tr>
<td>FRAUD</td>
<td>Hypothesis 3</td>
<td>+</td>
</tr>
<tr>
<td>BIG4</td>
<td>Hypothesis 1</td>
<td>+</td>
</tr>
<tr>
<td>LNASSET</td>
<td>Control variable</td>
<td>+</td>
</tr>
<tr>
<td>DEBT</td>
<td>Hypothesis 2</td>
<td>?</td>
</tr>
<tr>
<td>INT/EARN</td>
<td>Hypothesis 2</td>
<td>+</td>
</tr>
<tr>
<td>BOARD</td>
<td>Hypothesis 2</td>
<td>−</td>
</tr>
<tr>
<td>DENOTE</td>
<td>Hypothesis 2</td>
<td>−</td>
</tr>
<tr>
<td>SUBSIDY</td>
<td>Hypothesis 2</td>
<td>−</td>
</tr>
<tr>
<td>EARN</td>
<td>Hypothesis 2</td>
<td>−</td>
</tr>
<tr>
<td>UNIV</td>
<td>Control variable</td>
<td>+</td>
</tr>
<tr>
<td>OPP/TA</td>
<td>Control variable</td>
<td>+</td>
</tr>
</tbody>
</table>
IV. Empirical Results and Analysis

This section presents descriptive statistics and discusses the empirical results of two models used to test the hypotheses set out in section II.

1. Descriptive statistics

Table 4: Descriptive statistics (n=332)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unit</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIT FEES</td>
<td>thousand</td>
<td>361.02</td>
<td>142.50</td>
<td>950.00</td>
<td>174.23</td>
</tr>
<tr>
<td>YEAR03</td>
<td></td>
<td>0.30</td>
<td>0.00</td>
<td>1.00</td>
<td>0.46</td>
</tr>
<tr>
<td>YEAR02</td>
<td></td>
<td>0.30</td>
<td>0.00</td>
<td>1.00</td>
<td>0.46</td>
</tr>
<tr>
<td>YEAR00</td>
<td></td>
<td>0.04</td>
<td>0.00</td>
<td>1.00</td>
<td>0.20</td>
</tr>
<tr>
<td>YEAR99</td>
<td></td>
<td>0.03</td>
<td>0.00</td>
<td>1.00</td>
<td>0.16</td>
</tr>
<tr>
<td>YEAR98</td>
<td></td>
<td>0.02</td>
<td>0.00</td>
<td>1.00</td>
<td>0.14</td>
</tr>
<tr>
<td>FRUAD</td>
<td></td>
<td>0.21</td>
<td>0.00</td>
<td>1.00</td>
<td>0.41</td>
</tr>
<tr>
<td>BIG4</td>
<td></td>
<td>0.43</td>
<td>0.00</td>
<td>1.00</td>
<td>0.50</td>
</tr>
<tr>
<td>ASSET</td>
<td>million</td>
<td>3,415.97</td>
<td>429.95</td>
<td>14,740.42</td>
<td>2,667.64</td>
</tr>
<tr>
<td>DEBT</td>
<td></td>
<td>0.15</td>
<td>0.01</td>
<td>0.73</td>
<td>0.13</td>
</tr>
<tr>
<td>INT/EARN</td>
<td></td>
<td>0.06</td>
<td>-0.62</td>
<td>2.13</td>
<td>0.16</td>
</tr>
<tr>
<td>BOARD</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>DENOTE</td>
<td></td>
<td>0.04</td>
<td>0.00</td>
<td>0.79</td>
<td>0.11</td>
</tr>
<tr>
<td>SUBSIDY</td>
<td></td>
<td>0.13</td>
<td>0.01</td>
<td>0.38</td>
<td>0.05</td>
</tr>
<tr>
<td>EARN</td>
<td></td>
<td>0.27</td>
<td>-0.26</td>
<td>0.70</td>
<td>0.13</td>
</tr>
<tr>
<td>UNIV</td>
<td></td>
<td>0.30</td>
<td>0.00</td>
<td>1.00</td>
<td>0.46</td>
</tr>
<tr>
<td>OPP/TA</td>
<td></td>
<td>0.02</td>
<td>0.00</td>
<td>0.61</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Table 4 indicates the descriptive statistics of audit fees and financial data of sample schools for the years 1998 to 2003. As shown, the average audit fee for the sample schools was NT$361,024, and the minimum was NT$142,500 whereas the maximum was NT$950,000. We can see that academic year 2002 and 2003 consists of both 30% of the sample, respectively. Approximately 43% of the sample schools were audited by the Big 4. The biggest school had total assets equivalent to NT$14.74 billion and the smallest one had total assets equivalent to NT$430 million; however, the average total assets were NT$3.42 billion. Generally speaking, the ratio of debt to total assets for private colleges and universities cannot be that high and so it ranged from 1% to 73% with a mean of 15%. On average, the ratio of interest expenses to net income was 0.06
(maximum of 2.13). The average expenditure of board of directors was 0.29%, and the minimum was 0 whereas the maximum was 2%. As for the ratio of personal donations to current revenue, the mean was 4% (maximum of 79%). On average, the ratio of subsidy to current revenue was 13% (minimum of 1%, maximum of 38%). The average ratio of current earnings to current revenue was 27% (minimum of -26%, maximum of 70%). The private universities made up 30% of the sample. As for the ratio of operating funds to total assets, the mean was 2% (maximum of 61%).

2. **Test of Multicollinearity**

Correlation analysis

The results of Pearson correlation analysis are presented in Table 5. Among the independent variables, as indicated in Table 5, there were relatively high correlations between LNASET and UNIV (0.692, significant at the 0.01 level), YEAR03 and BIG 4 (0.561, significant at the 0.01 level), and the remaining coefficients were all less than 0.5. We computed the variance inflation factor (VIF) to assess the susceptibility of the model to problems of multicollinearity. All the VIFs of variables fall below 3.0 which suggest that multicollinearity is unlikely to be problematic.
Table 5: Pearson Correlation Matrices

<table>
<thead>
<tr>
<th></th>
<th>YEAR03</th>
<th>YEAR02</th>
<th>BIG4</th>
<th>LNASSET</th>
<th>DEBT</th>
<th>INTERN</th>
<th>BOARD</th>
<th>DENOTE</th>
<th>SUBSIDY</th>
<th>EARN</th>
<th>UNIV</th>
<th>OPP/TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR03</td>
<td>1.000</td>
<td>-0.499**</td>
<td>0.561**</td>
<td>0.072</td>
<td>-0.079</td>
<td>-0.148**</td>
<td>0.018</td>
<td>-0.022</td>
<td>-0.174**</td>
<td>-0.213**</td>
<td>0.053</td>
<td>0.005</td>
</tr>
<tr>
<td>YEAR02</td>
<td>1.000</td>
<td>-0.280**</td>
<td>0.019</td>
<td>0.009</td>
<td>-0.003</td>
<td>-0.011</td>
<td>-0.008</td>
<td>0.067</td>
<td>0.053</td>
<td>0.003</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>BIG4</td>
<td>1.000</td>
<td>0.211**</td>
<td>-0.017</td>
<td>0.010</td>
<td>-0.174**</td>
<td>-0.133*</td>
<td>-0.218**</td>
<td>-0.225**</td>
<td>0.209**</td>
<td>0.058</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNASSET</td>
<td>1.000</td>
<td>-0.343**</td>
<td>-0.177**</td>
<td>-0.469**</td>
<td>-0.006</td>
<td>-0.122*</td>
<td>0.063</td>
<td>0.692**</td>
<td>0.371**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEBT</td>
<td>1.000</td>
<td>0.655**</td>
<td>0.063</td>
<td>-0.075</td>
<td>-0.106</td>
<td>-0.021</td>
<td>-0.225**</td>
<td>-0.149**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT/EARN</td>
<td>1.000</td>
<td>-0.006</td>
<td>-0.041</td>
<td>-0.107</td>
<td>-0.071</td>
<td>-0.132*</td>
<td>-0.099</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOARD</td>
<td>1.000</td>
<td>-0.068</td>
<td>0.122*</td>
<td>-0.194**</td>
<td>-0.303**</td>
<td>-0.075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DENOTE</td>
<td>1.000</td>
<td>0.017</td>
<td>0.489**</td>
<td>-0.038</td>
<td>0.075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUBSIDY</td>
<td>1.000</td>
<td>-0.114*</td>
<td>0.013</td>
<td>0.055</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EARN</td>
<td>1.000</td>
<td>-0.016</td>
<td>0.239**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIV</td>
<td>1.000</td>
<td>0.219*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPP/TA</td>
<td></td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
3. Empirical results

Test results of the value of audit service when the audited organization consists the tendency of fraud

To reason the value of audit services from a demand stand point, when the tendency of the organization being audited to commit fraudulence becomes greater, if the audit process is able to effectively prevent fraudulence from happening, then its value becomes greater. According to the documents provided by the news media and the MOE, which showed that during the year 1998 to 2000, when fraud issues exists within a school, the MOE will appoint an professional auditor to check its annual financial statements, when the school is back on track, the auditor and its fees will then be selected using the open tendering process. This article took the samples of schools with fraudulent activities during the year 1998 and 2003, defined it as organizations with fraudulent tendency.

<table>
<thead>
<tr>
<th>Methods</th>
<th>Academic Year</th>
<th>No. of School</th>
<th>No. of school warned</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned by MOE</td>
<td>1998</td>
<td>7*</td>
<td>4</td>
<td>366,667</td>
<td>163,299</td>
<td>300,000</td>
<td>700,000</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>9**</td>
<td>6</td>
<td>443,333</td>
<td>165,126</td>
<td>360,000</td>
<td>780,000</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>14</td>
<td>11</td>
<td>490,833</td>
<td>166,386</td>
<td>410,000</td>
<td>830,000</td>
</tr>
<tr>
<td>Open tendering</td>
<td>2001</td>
<td>101</td>
<td>18</td>
<td>251,167</td>
<td>59,027</td>
<td>170,000</td>
<td>327,000</td>
</tr>
<tr>
<td>Limited tendering</td>
<td>2002</td>
<td>101</td>
<td>18</td>
<td>247,833</td>
<td>60,334</td>
<td>170,000</td>
<td>327,000</td>
</tr>
<tr>
<td></td>
<td>2003</td>
<td>100</td>
<td>14</td>
<td>375,000</td>
<td>112,428</td>
<td>245,000</td>
<td>555,000</td>
</tr>
</tbody>
</table>

*in 1998: 2 schools' financial data could not be obtained
**in 1999: 1 schools' financial data could not be obtained

From Table 6, it is easy to discover that between the year 1998 and 2000, the average number of schools that were suspected of fraudulent activities and received government appointed auditors is higher than the average number between the years 2001 to 2003. After controlling all of the possible elements that might effect audit fees, this research will show that the value of auditing services perceived is higher when the schools consists of fraudulent tendency, and to prove that when auditing services provide can effectively stop fraud, the value of information provided by the auditing services increases.

The results of audit fee OLS regression are presented in Table 7. Audit fees in the academic year 2003 (YEAR03) had clearly 23.26 percent of audit fees higher than those
in the academic year 2002 (YEAR02) (p-vale = 0.0000). Regarding the Big 4 audit firms (BIG4), when we used the Big 4 to represent audit quality, this research as found the coefficient estimate on BIG4 to be 0.1958 with a 1% significance level. This means that, by controlling for other possible influential variables, BIG4 audit fees on average are 19.58% higher than non-Big 4 audit firms. The result indicates that Big 4 auditors will have higher audit fees than non-Big 4 auditors, supporting our first hypothesis.

Previous research has showed that the larger the client’s organization, the more frequent its daily operational activities; therefore, the audit firms need to spend more auditing time and effort in order to accurately verify the work. This means that the size of an organization is directly related to its audit fees. The coefficient estimate on LN ASSET is 0.2514 and at the 1% significance level, which means that when the total assets of school vary by 1%, its audit fees will vary by 0.2514%.

With respect to hypothesis 2, the section involving the client risk element of the cost for audit firms, when non-profitable organizations (private colleges) have reached a stable financial growth, their auditing risks will decrease, and the auditors will spend less time in verification and therefore costs will decrease, so the risk for non-profitable organizations is expected to be shown in audit fees. This research replaces risks with debt rate (DEBT), interest rate fees compared to the earning ratio (INT/EARN), the rate of donation income (DENOTE), the rate of governmental support (SUBSIDY) and the rate of earning for current period (EARN). The result showed negative DEBT and was not noticeable, which is very different than that of profitable organizations. A possible explanation for this could be that NPOs lack share holders, which seek for compensation when the audit process fails. Also its process of raising funds (borrowing money from the bank) is different as compared to for-profit organizations; therefore, the foundation of representation hypothesis and insurance hypothesis is weak. The coefficient on the rate of donation (DENOTE) is -0.2996 at the 5% significance level, the coefficient on the rate of governmental support (SUBSIDY) is -0.9294 at a 1% significance level and the coefficient on the rate of earning for current period (EARN) is -0.3269 at the 5% significance level. These results are consistent with hypothesis 2 and the negative audit fee theory, which suggested that when the risk of NPOs are low, the public audit fees of appointed auditors become lower. Hypothesis 2 estimated that the amount of funds spent by the board of directors is directly related to the operational efficiency of the board, which also suggests that the better a NPO is run, the lower its audit fees. The coefficient on the board of directors expenses (BOARD) is -9.5224 and with an anticipated 5% significance level. When the board of directors spends more, the efficiency of their organization is negative related to the audit fees, and the results support hypothesis 2.
We took the 332 samples gathered between the years 1998 and 2003 to engage in the demonstration and the results are shown in table 7. During the sampling period, the coefficient on school with fraud (FRAUD) reached 0.1292 with 1% significance level at one point. This means that during the years 1998 to 2003, after all elements were controlled, the audit fee of the schools that has committed fraudulence is 12.92% higher than those of the other schools. This result is consistent with what the research had anticipated, from the demand stand point of auditing services, when a larger tendency of fraud exists in schools being audited, the value of auditing services provided by the auditors becomes greater, when the tendency of committing fraud of organizations being audited becomes greater, and that auditing services is able to effectively prevent fraud, then the value of the information provided by auditing becomes greater.

Because of the difficulty of obtaining sampling data between the years 1998 and 2000, there were only 30 collected and 21 were cases of schools with fraud tendency. The auditors were appointed directly by the MOE, which was different than the methods applied in the years between 2001 and 2003. In order to prevent this from influencing the research result, we have eliminated the years from 1998 to 2000 and took only the 302 samples collected between the years 2001 to 2003. The coefficient on schools with fraud (FRAUD) is 0.1427 at the 1% significance level. The percentage of controlled variable interest rate over the rate of current earning becomes noticeable. This proved that when the organization being audited shows tendency of committing fraudulent activities, after the scale, risk and complexity factors were controlled, to reason from the demand stand point, the value of the information provided by auditing becomes greater when the auditing firms can effectively prevent fraud from happening, the results support hypothesis 3.
### Table 7: The value of audit service under the audited organizations consist the tendency of fraud

\[
LNA_U_i = a + d_1 \text{YEAR03}_i + d_2 \text{YEAR02}_i + d_3 \text{YEAR00}_i + d_4 \text{YEAR99}_i + d_5 \text{YEAR98}_i + b_1 \text{FRAUD}_i + b_2 \text{BIG4}_i + b_3 \text{LNASSET}_i + b_4 \text{DEBT}_i + b_5 \text{INT/EARN}_i + b_6 \text{BOARD}_i + b_7 \text{DENOTE}_i + b_8 \text{SUBSIDY}_i + b_9 \text{9EARN}_i + b_{10} \text{UNIV}_i + b_{11} \text{OPP/TA}_i + \varepsilon_i \\
\tag{1}
\]

\[
LNA_U_i = a + d_1 \text{YEAR03}_i + d_2 \text{YEAR02}_i + b_1 \text{FRAUD}_i + b_2 \text{BIG4}_i + b_3 \text{LNASSET}_i + b_4 \text{DEBT}_i + b_5 \text{INT/EARN}_i + b_6 \text{BOARD}_i + b_7 \text{DENOTE}_i + b_8 \text{SUBSIDY}_i + b_9 \text{9EARN}_i + b_{10} \text{UNIV}_i + b_{11} \text{OPP/TA}_i + \varepsilon_i \\
\tag{2}
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-value</th>
<th>VIF</th>
<th>Coefficient</th>
<th>p-value</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>7.2424</td>
<td>0.0000</td>
<td></td>
<td>7.2799</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>YEAR03</td>
<td>0.2326</td>
<td>0.0000</td>
<td>1.9941</td>
<td>0.2363</td>
<td>0.0000</td>
<td>2.0265</td>
</tr>
<tr>
<td>YEAR02</td>
<td>-0.0419</td>
<td>0.2179</td>
<td>1.4086</td>
<td>-0.0372</td>
<td>0.2663</td>
<td>1.3608</td>
</tr>
<tr>
<td>YEAR00</td>
<td>0.6055</td>
<td>0.0000</td>
<td>1.3138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEAR99</td>
<td>0.4524</td>
<td>0.0000</td>
<td>1.2709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEAR98</td>
<td>0.1313</td>
<td>0.1824</td>
<td>1.1513</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRAUD</td>
<td>0.1292</td>
<td>0.0005</td>
<td>1.3237</td>
<td>0.1427</td>
<td>0.0003</td>
<td>1.1235</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.1958</td>
<td>0.0000</td>
<td>1.7856</td>
<td>0.2071</td>
<td>0.0000</td>
<td>1.7145</td>
</tr>
<tr>
<td>LNASSET</td>
<td>0.2514</td>
<td>0.0000</td>
<td>2.7528</td>
<td>0.2499</td>
<td>0.0000</td>
<td>2.8465</td>
</tr>
<tr>
<td>DEBT</td>
<td>-0.0511</td>
<td>0.6658</td>
<td>1.4299</td>
<td>-0.1755</td>
<td>0.2392</td>
<td>2.0021</td>
</tr>
<tr>
<td>INT/EARN</td>
<td>0.1517</td>
<td>0.1172</td>
<td>1.4244</td>
<td>0.4146</td>
<td>0.0409</td>
<td>1.8822</td>
</tr>
<tr>
<td>BOARD</td>
<td>-9.5224</td>
<td>0.0344</td>
<td>1.4859</td>
<td>-13.6026</td>
<td>0.0034</td>
<td>1.4378</td>
</tr>
<tr>
<td>DENOTE</td>
<td>-0.2996</td>
<td>0.0286</td>
<td>1.3019</td>
<td>-0.3230</td>
<td>0.0205</td>
<td>1.3773</td>
</tr>
<tr>
<td>SUBSIDY</td>
<td>-0.9294</td>
<td>0.0005</td>
<td>1.1140</td>
<td>-0.9616</td>
<td>0.0013</td>
<td>1.1682</td>
</tr>
<tr>
<td>EARN</td>
<td>-0.3269</td>
<td>0.0158</td>
<td>1.6397</td>
<td>-0.2926</td>
<td>0.0421</td>
<td>1.6814</td>
</tr>
<tr>
<td>UNIV</td>
<td>0.0983</td>
<td>0.0152</td>
<td>1.9800</td>
<td>0.0891</td>
<td>0.0295</td>
<td>2.0281</td>
</tr>
<tr>
<td>OPP/TA</td>
<td>0.3994</td>
<td>0.0280</td>
<td>1.4195</td>
<td>0.3830</td>
<td>0.0431</td>
<td>1.3488</td>
</tr>
</tbody>
</table>

Adjusted R-squared 0.704 0.695
F-statistic 50.162 53.753
Prob(F-statistic) 0.000 0.000
Samples 332 302
V. Conclusions and Limitations

The main obstacle of audit fee research lies in fees collection. In the past, audit fees were usually collected by the questionnaire survey method. This study however features collecting first-hand audit fees data from audited financial statements of private colleges and universities directly for the 2001-2003 academic years and partially for the 1998-2000 academic years.

The empirical results support the first hypothesis (H1) that after controlling other possible factors, Big 4 audit firms charged their audit fees at least 19.58% higher fees than those of non-Big 4 audit firms. Audit fees are positively correlated with organization size. The coefficient estimate on log of total assets of private universities and junior colleges is 0.2514 and significant at the 0.01 level, indicating that when the school's total assets increase or decrease 1%, audit fees would increase or decrease 0.2514%, simultaneously.

As to the second hypothesis (H2), it is argued that auditors could reduce follow-up audit works to cut down audit costs since low audit risk has been set for the NPOs clients (private colleges and universities) with steady and strong financial structures. In this study, we used the ratio of debt to assets (DEBT), interest expenses divided by current net income/loss (INT/EARN), the ratio of personal donation to current revenue (DENOTE), the ratio of subsidy to current revenue and the ratio of current earnings to current revenue (SUBSIDY) to proxy for client's risks. The variable DEBT is negative and not statistically significant. This result is different from what had been found in previous NPOs studies, possibly since no claims have been made on audit failure by NPOs or the financing procedures in NPOs are different from that of the profit organizations that leads to the theoretical foundation of insurance hypothesis being weak. Moreover, INT/EARN is significantly related to audit fees with a positive effect. DENOTE, SUBSIDY and EARN are also significant and negative in the model. These results support our hypotheses 2, that is, NPOs with lower business risk and better corporate governance are more likely to pay lower audit fees.

From demand standpoint, the audit service value can be inferred that the greater intention the auditees are likely to commit fraud, the higher the audit service would be valued while the audit work can effectively prevent fraud occurrence. We defined fraudulent organization as the school has ever experienced defect. The results are consistent with hypotheses 3, suggesting that there is a positive association between fraudulent organizations and audit fees after controlling variables Big 4, industry specialist, size and complexity of schools and audit risk. These findings show that audit service value is driven by how effective the audit work is conducted. It means, the more the fraudulent schools are detected, the greater the audited information as well as audit serviced are priced.
References


American Accounting Association.
