The Effects of Board Independence and Auditors' Audit and Non-Audit Fees on IPO Value

Salim Chahine

School of Business
American University of Beirut
Bliss Street
P.O.Box: 11-0236
Beirut, Lebanon
Tel: 961.1.374374 (Ext: 3722)
Fax: 961.1.750214
Email: salim.chahine@aub.edu.lb

Igor Filatotchev

Sir John Cass Business School
City University London
106 Bunhill Row
London EC1Y 8TZ
United Kingdom
Email: igor.filatotchev@city.ac.uk

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Abstract

This paper examines the effect of board independence and fees paid to audit firms on the value of 375 UK IPOs. It controls for the simultaneous determination of audit and non-audit fees and shows that both fees positively affect IPO value. The effect of both fees is significantly higher in firms with more independent boards. Hence, internal governance mechanisms may complement services provided by auditors in terms of generating higher valuations. We also find evidence of the positive moderating effects of venture capitalists. Overall, our results suggest that audit and non-audit fees are likely to be driven by filing requirements rather than client-specific rents suggesting the auditors' independence when determining cost of their audit and non-audit services to IPO firms.

Key Words: Audit fees, Non-audit fees, Board Independence, IPO, Firm Value

JEL Classification: G32, G34, M42

I- Introduction

Despite the large number of studies on the effect of auditor reputation and audit fees on initial underpricing, i.e. the first day return, in initial public offerings (IPOs) (Beatty, 1989; Menon and Williams, 1991; Hogan, 1997; Mayhew and Wilkins, 2003), there has been no research to date on the combined effects of audit fees and the monitoring role of independent board directors. Preparing for their IPOs, firms demand significantly more extensive consulting services. Therefore, the IPO firms' auditors may have incentives to write favorable audit reports to avoid loosing lucrative consulting services (DeAngelo, 1981; Antle, 1984), which may potentially pose a threat to auditor independence and reduce the quality of audit services (Simunic, 1984, Coffee, 2004; Beekes and Lubberink, 2005). This potential agency conflict can be mitigated by the firm's governance factors, such as board independence (Craswell et al., 1995; Carcello et al., 2002). Therefore, board independence may help to monitor and enhance the quality of services provided by auditors. This study examines the effects of the combined effects on IPO valuations provided by the quality of auditing firm services proxied by audit and non-audit fees and board independence. More specifically, it verifies whether audit and non-audit fees are inter-related,[1] and whether their effects on the pricing of the IPO firm are moderated by board independence.

At the time of the IPO, the firm's existing owners and the new investors have conflicting objectives. The existing owners have an incentive to minimize underpricing (i.e.

[1] This is consistent with recent evidence on the joint determination of non-audit and audit services (DeFond et al. 2002, Frankel et al. 2002, Ashbaugh et al. 2003, Chung and Kallapur 2003; Larcker and Richardson 2004; Francis and Ke, 2004; Ghosh et al. 2005).

maximize the issue price) because it transfers wealth from them to new investors. The new investors, on the other hand want the issue price to be as low as possible so that they can maximize their initial return. Auditors are therefore hired so that they reduce the information asymmetry for new investors or be used as a signal of better quality firm. Thus, the presence of a better quality auditor will influence both the offering price (will allow the firm to increase it) and the initial return earned by the investor.

Using a database of 375 UK IPOs from 1999 to 2003, we document a negative (positive) association between audit (non-audit fees) and underpricing. This suggests that audit fees play both informational and certification roles at IPOs (Dye, 1993; Willenborg, 1999), whereas non-audit fees are more likely to reduce the quality of earnings. Consistent with our predictions, good corporate governance affects the relationships between underpricing and fees paid to auditors. Specifically, independent boards demand higher audit and non-audit services to protect their reputational capital (Fama and Jensen, 1983), avoid legal liability (Sahlman, 1990), and protect shareholders interest, which significantly reduce IPO underpricing.

Further investigations control for the effect of board independence and both audit and non-audit fees on IPO value, as proxied by adjusted price-to-book ratio. They confirm our predictions with regard to the monitoring role played by independent boards. In addition, venture capital (VC) involvement in the IPO firm also plays a significant moderating role in the relationship between auditor's fees and underpricing, and our results show higher levels of underpricing in non-VC backed IPOs with higher non-audit

fees. This is consistent with prior results in Larker and Richardson (2004), and confirms the role played by institutional investors such as VCs in reducing potential threats to auditors' independence associated with non-audit services.

This paper makes a number of contributions to previous research. First, in contrast with prior studies exploring the effects of auditor's fees in more mature firms (Whisenant et al., 2003; Antle et al., 2006), this paper focuses on the context of IPOs where the auditing industry is more competitive, and non-audit fees are significantly higher due to additional services such as consultancy, guidance on the regulatory aspects of an IPO and preparing listing documentation (Mayhew and Wilkins, 2003). Second, the vast majority of prior studies assume that audit and non-audit fees are independent. We argue that the two types of fees may be jointly determined. Using a simultaneous equation system with instrumental variables, we find no association between audit and non-audit fees. This suggests that there is either no knowledge spillover or equal spillover between both fees in IPO firms.[2] One explanation is that audit and non-audit fees may be driven by filing requirements rather than client-specific rents. Therefore, they should have a stronger signaling effect than in more mature firms. This finding may also reflect the greater independence of auditors in a more competitive auditing industry related to the IPO markets.[3]

[2] Knowledge spillovers refer to: "information generated while performing management consulting services that can produce economic rents by reducing auditing costs" (Defond et al., 2002, page 1251).
[3] While a recent report prepared for the Department of Trade and Industry in the UK has found evidence that higher concentration within the audit sector for more mature firms has led to higher audit fees (Competition and Choice in the UK Audit Market, 2006), our sample refers to a less concentrated audit market for new issues.

Third, this paper contributes to the debate on the effects of fees paid to auditors and the quality of board oversight on the value of IPOs. Recent corporate failures and the collapse of Arthur Andersen in 2002 have intensified regulatory concerns about auditors' independence and the quality of their services. These concerns were followed by new rules and practices in many countries such as the UK (e.g. the Financial Reporting Council's new regulatory powers in 2004 and the Eighth Company Law Directive on statutory audit) and the US (e.g., the Sarbanes-Oxley Act 2002). This paper focuses on audit and non-audit fees as proxies for the quality of services and the level of monitoring provided by audit firms. Our empirical findings confirm the effectiveness of Cadbury's (1992) recommendations with regard to the role played by independent directors, which were later integrated into the Combined Code of Corporate Governance adopted as best practice by the London Stock Exchange. This paper reports evidence on potential complementarities between the governance roles of independent boards and the fees paid to auditors. More independent boards demand enhanced audit and non-audit services, which increase the fees paid to auditors and allow for a higher valuation multiple of IPO firms. Hence, our results bring additional support to the assumptions about objectivity and effectiveness of external auditors and their specific relationships with non-executive directors (O'Sullivan, 1999).

The paper is organized as follows. Section 2 presents a review of literature and hypotheses. Section 3 presents the database and our research methodology. Section 4 presents the empirical results, whereas Section 5 concludes.

II- Review of Literature and Hypotheses

IPO literature proposes a large number of theoretical and empirical models of IPO stock market performance, including agency, behavior and legal aspects associated with firms seeking to obtain public listing (see Ritter and Welch, 2002, for a comprehensive review). Within this diverse literature, the signaling perspective is focused on information asymmetries between the IPO firm external investors which create substantial agency problems. The adverse selection framework suggests that investors know considerably less about the "true" value of the IPO firm than its insiders. As Ritter and Welch (2002) argue: "after all, small investors cannot take a tour of the firm and its secret inventions". In addition, information asymmetries may also lead to a moral hazard problem associated with potentially opportunistic behavior of incumbent managers during and after the float (Jensen, 1986). Investors will therefore anticipate potential agency costs and price-protect themselves, thus leading to an IPO discount defined as the difference between the IPO issue price and the intrinsic value of the IPO. Prior research approximates this discount by greater underpricing measured by the difference between the first-day-trading closing price and the offer price (e.g., Filatotchev and Bishop, 2002), while others associate it with lower industry adjusted offer price/book or price/sales ratios (e.g. Chahine, 2004).

Building on these arguments, the signaling perspective suggests that entrepreneurs may send signals that better inform potential investors about the true value of the firm and reduce the extent of agency problems and associated stock-market discount (Filatotchev and Bishop, 2002). The entrepreneur may try to reduce information asymmetries by

choosing more reputable auditors and enhancing the quality of their services. Corporate governance parameters, such as board independence, may be another important factor in terms of signaling the firm's value. The IPO discount is, therefore, an outcome of inter-relationships between these governance- and audit-related factors. The following sections develop these arguments further and suggest a number of testable hypotheses.

Prior research distinguishes between demand- and supply-side models of the audit quality. Demand-side models suggest that IPO firms need services of a "higher-quality auditor" to solve information asymmetry problems and associated agency conflicts between managers and stakeholders (Palmrose, 1984). Titman and Trueman (1986) argue that higher-quality auditors help to improve the accuracy of information provided by the IPO firm and allow investors to make a more precise estimate of the firm's value. Relatively risky firms are less likely to demand a higher-quality auditor who may reveal their less favorable information (Datar et al., 1991).

Feltham et al. (1991) propose a supply-side risk model according to which the quality of audit services depends on audit supply characteristics, i.e. the effects of client-specific risk on audit fees and services. Audit firms may avoid risky IPOs which are more likely to fail in order to reduce potential litigation costs and their related adverse effects on their reputational capital. The higher the client-specific risk, the greater the risk of auditor litigation, and this effects should decrease the audit quality and increase the auditor's fees (Simunic and Stein, 1996).[4] Within this framework, researchers provide evidence of a

[4] Similarly, Hogan (1997) argues that the marginal benefit of hiring a high quality auditor may be offset by the higher cost of this action. She examines US IPOs from 1990 to 1992, and shows that IPO firms choose

positive association between client risk factors, audit effort, and audit fees (Pratt and Stic, 1994; O'Keefe et al., 1994; Simunic and Stein, 1994; Johnstone and Bedard, 2003). The audit firms spend additional hours in auditing higher client risk because they need to enhance their monitoring and reduce the risk of audit failure (Bell et al., 2001).

Both perspectives suggest that the intensity and quality of the auditor involvement should send a positive signal about the IPO firm's value to investors. Previous studies use audit compensation as a proxy for auditor quality and reputation (see Beatty (1989) for a discussion). Behn et al. (1999) indicate that client satisfaction with the audit team is positively correlated with audit fees. Watkins et al. (2004) argue that audit fees are generally assumed to be positively audit quality. [5]. Following this research, we expect:

Hypothesis 1a: IPO underpricing is negatively related to audit fees

In addition to audit fees, underpricing may be affected non-audit services provided by the auditor. Simunic (1984) argues that non-audit services are needed in "problem" firms. They are higher in firms undergoing reorganization such as changes in control and information systems, mergers and strategic restructuring (Firth, 2002; Palmrose, 1986). Therefore, non-audit services play a particularly important role in firms preparing themselves for a stock market listing. However, non-audit services provided by the

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the auditor quality level which minimizes the sum of underpricing and auditor compensation, conditional on their risk and size.

[5] Using a survey from 210 listed UK firms, Beattie and Fearnley (1995) show that both audit fee level and audit quality are the main factors affecting the choice of an audit firm.

auditor may create serious conflict of interest.[6] For example, Frankel et al. (2002) find that the ratio of non-audit to total fees paid, used as a proxy for the lack of auditor independence, is positively associated with earnings management and the level of discretionary accruals. They argue that greater non-audit fees may be associated with a lower earnings quality which reduces stock prices. Larker and Richardson (2004) find positive association between non-audit fees and discretionary accruals in smaller firms with lower market-to-book ratio, lower institutional holdings, and greater insider holdings. They argue that "weaknesses in corporate governance appear to be an important determinant of the relation between measures of auditor independence and earnings quality" (page 627). Since IPO firms are usually smaller, younger and have greater insider holdings, we expect investors to rationally associate greater non-audit fee with lower earnings quality at IPOs. Hence:

Hypothesis 1b: Underpricing is positively related to non-audit fees

Previous arguments suggest that the two types of audit fees may have opposite signaling effects on the IPO value. Corporate governance literature argues that more effective boards of directors may help to mitigate the agency problems related to the separation of ownership and control and enhance firm value. A number of studies associate board effectiveness with such structural characteristics as board composition and independence

[6] The Investor Responsibility Research Center (IRRC) report indicates that for the firms in the S&P 500 index with revenues greater than $10 million the average proportion of fees paid to a firm's auditor for performance of non-audit services to total audit fees in 2000 is 72%. For example, in 2000, Enron paid $25 million to Anderson for consulting services and $27 million for audit-related services. Following the Enron and WorldCom accounting scandals in 2001–2002, the Sarbanes-Oxley Act of 2002 (House Resolution 3763) was signed into law. Title II of the Act deals entirely with the subject of auditor independence. Provisions of the law severely restrict the type of services that an auditor can provide its client outside the auditing practice without prior approval of its Audit Committee.

(Fama and Jensen, 1983; Shleifer and Vishny, 1997). While executive directors have technical competencies and good knowledge of the firm, non-executive (independent) directors participate in monitor and control over managerial discretion,. In addition they offer relevant complementary knowledge and participate in strategic decisions of the firm. More specifically, larger independent boards underpin a greater objectivity in assessing the behavior of managers, and operate as a signal of effective monitoring and control systems of the firm (Daily et al., 1999). Weisbach (1988) finds that outside directors provide a monitoring role in non-financial U.S. firms. Rosenstein and Wyatt (1990) report a positive abnormal return at the time of the appointment of an outside director. Therefore, IPO firms with more independent boards should have a premium in terms of investors' valuation (Gompers, 1995). Indeed, Filatotchev and Bishop (2002) show evidence on the existence of a negative association between board independence and initial underpricing in UK IPOs.

Therefore an independent board is a strong corporate governance mechanism which strengthens the firm's accounting system and controls the quality of both audit and non-audit services. Good corporate governance practices reduce the threat of reduced auditor independence associated with higher non-audit fees (Larker and Richardson, 2004). Prior research suggests independent directors may either complement auditor's effort and oversight (Carcello et al., 2002) or use their knowledge and expertise to substitute for some work required from auditors (Cohen and Hanno, 2000).

Taking these arguments into account, we expect that independence boards may enhance positive signaling effects of audit services, and mitigate potential agency costs associated with non-audit activities of the auditor. Therefore:

Hypothesis 2a: The relationship between underpricing and audit fees is positively moderated by board independence. Underpricing is negatively (positively) related to audit fees in IPOs with independent (dependent) boards

Hypothesis 2b: The relationship between underpricing and non-audit fees is negatively moderated by board independence. Underpricing is negatively (positively) related to non-audit fees in IPOs with independent (dependent) boards

However, the effect of audit and non-audit services depends on the extent to which auditing firms independently determine both fees. While a qualified auditor may discover a problem, s/he should be independent enough to disclose it to the public. Since clients can switch their auditors, Simunic (1984) argues that non-audit services provide auditors with client-specific rents reducing their independence. To avoid loosing the lucrative fees related to non-audit services, auditors are more likely to write favourable reports (DeAngelo, 1981; Antle, 1984), and are reluctant to raise issues with the preparation of financial statements (Becker et al., 1998). Audit firms may be even unwilling to criticize the work carried out by their consulting divisions (Pany and Rekers, 1983, 1988; Shockley, 1981; Knapp, 1985). Empirical tests of the effect of audit and non-audit fees on IPO pricing should first control for their joint determination.

III- Data and Methodology

Our sampling procedure involved a number of steps. We first compiled a list of all IPOs that have been floated on the London Stock Exchange (LSE) and the Alternative Investment Market (AIM) from 1 January, 1999 to 1 January, 2004. We obtained our primary list of IPOs from the London Stock Exchange New Issues files. We gathered additional information from the AIM Market Statistics publications. From the original list of 620 IPOs, we excluded re-admissions and transfers from the main market to AIM. In line with previous IPO studies we also excluded flotation of unit and investment trusts and focused on manufacturing and services firms (Beatty and Ritter, 1986). We also excluded listings which represented investment and acquisition vehicles because their governance systems were extremely simplified and their management teams resemble investment committees of private equity firms. Next, we excluded all IPOs that represented de-mergers, corporate spin-offs, reverse takeovers, equity reorganizations and flotations of MBO/MBI firms since these are more mature firms that are associated with less extensive information asymmetries compared to entrepreneurial ventures. After these steps, the final sample included 375 IPOs for which we were able to gather audit and non-audit fees.

Our main variables of interest were obtained from the information provided in the IPO listing prospectuses that contained detailed information on fees paid to auditors as well as firm characteristics. The IPO prospectuses were obtained from the Thomson One Banker database that comprehensively covered companies' files for publicly quoted firms in the

U.K. Some missing listing prospectuses were collected directly from the firms and/or their advisors by sending written requests. The stock market-related data were obtained from Datastream.

Measures – Dependent Variable

Our analysis focuses on IPO underpricing measured by the first-day return, i.e. the difference between the offer and after-market prices. Hence, we test the following regression model:

$$\begin{aligned}\text{Underpricing} = {} & \alpha + \beta_1 \text{ LnAFEE} + \beta_2 \text{ LnNAFEE} + \beta_3 \text{ Board Independence} \\ & + \beta_4 \text{ Top5 Auditor dummy} + \beta_5 \text{ LnAsset} + \beta_6 \text{ Age} + \beta_7 \text{ Debt ratio} \\ & + \beta_8 \text{ Loss dummy} + \beta_9 \text{ Current Asset (\%)} + \beta_{10} \text{ Founder Ownership} \\ & + \beta_{11} \text{ VC dummy} + \beta_{12} \text{ AIM Market dummy} + \beta_{12} \text{ Underwriter reputation} \\ & + \beta_{12} \text{ Market Return} + \beta_{12} \text{ Market Volatility} + \beta_{13} \text{ Bubble dummy} \\ & + \beta_{14} \text{ Internet dummy} + \beta_{15} \text{ Industry dummies} + \varepsilon \qquad (1)\end{aligned}$$

Where, *LnAFEE* and *LnNAFEE* are the natural logarithm of audit and non-audit fees respectively. *Board Independence* is the percentage of outside directors on the firm's board. In line with prior research, board independence is expected to reduce underpricing (Filatotchev and Bishop, 2002).

Equation (1) also includes a number of control variables usually used in the IPO literature. Titman and Trueman (1986) demonstrate that firms with a higher true value are more likely to choose more reputable auditing firms compared to firms with a lower true value. *Top5 Auditor dummy* is equal to 1 if an audit firm belongs to "Big 5", zero otherwise.[7]

In line with prior research in the IPO literature, our empirical tests control for a number of variables related to firm characteristics. *LnAsset* is equal to the natural logarithm of the total asset, and larger firms are expected to have a lower underpricing (Mishra et al., 2001). *Age* is the number of years between the firm's foundation and its IPO date. It is expected that younger firms have higher growth opportunities and are likely to have a lower underpricing (Mishra et al., 2001). *Debt ratio* is equal to the book value of long-term debt over the total asset. Based on the "free cash flow" hypothesis, debt may play a governance role as firms need to meet interest payments and the bankruptcy procedures which can be invoked (Jensen, 1986). Levered firms are more likely to have a lower underpricing. Bhagat and Ranjan (2004) shows that underpricing increases in IPOs with losses. A *Loss dummy* is included to control for the riskiness of IPO firms. It is equal to 1 if the firm made a loss in the last reporting period prior to the IPO date, zero otherwise. *Current Asset (%)* is equal to current asset as a percentage of total asset. Since firms with a higher current asset are better able to seize unforeseen growth opportunities (Myers and Rajan, 1998), we expect a negative association between the current asset (%) and underpricing.

[7] The Big 5 auditors are KPMG Peat Marwick, Ernest & Young, Arthur Andersen, Deloitte & Touche, and PriceWaterhouseCoopers.

McConaughy et al. (1998) find that founding family controlled firms are more valuable than similar firms without founding family control. Founder ownership is expected to create a higher alignment of interest with outside shareholders and increase the firm's value (George et al., 2005). Our regression models include a *Founder Ownership* variable which is equal to the percentage of shares owned by founders following the offering. In addition to founders, the presence of venture capitalists who usually act as financiers and monitors is likely to add value to IPO firms (Manigart et al., 2000). We control for the presence of VCs among shareholders using a *VC dummy* which is equal to 1 if VC-backed IPO, zero otherwise.

We use an *AIM Market dummy* equal to 1 if the firm went public on AIM, and zero otherwise, to control for the market of listing effects.

Prior research suggests that more prestigious underwriters certify the quality of IPO firms, thus reducing underpricing (Beatty and Ritter, 1986). More recently, Cooney et al. (2001) find however, a positive association between underpricing and underwriter reputation. From an agency perspective, Loughran and Ritter (2002) argue that underwriters may seek their own advantage by charging lower fees and underpricing more the IPO firms. Empirical investigations control for the underwriter reputation using their cumulative market share over the studied period.

The regression models also control for time effects on underpricing using three proxies for market momentum (Derrien and Womack, 2003). A *Market return* variable was calculated as the weighted average of the buy-and-hold returns of the related market index during the one-month period before the IPO date. A *Market volatility* variable was calculated as the standard deviation of the one-month returns of the related market index in the immediate month before the IPO first-trade date. A *Bubble dummy* variable controls for the positive effect of the hot issue period on underpricing. It is equal to 1 if an IPO took place during the period 1999-2000, zero otherwise. Industries dummies are included for the following sectors: (1) mining, oil, gas, energy, (2) IT, business support services, (3) manufacturing of electronics, others, (4) bio-technology, pharmaceutical and health-services, (5) retail and wholesale trading, (6) media, communication and transport, and (7) leisure and entertainment with remaining firms being used as control.

Previous studies mainly used OLS regressions to test various organizational outcomes of the two types of fees. However, if audit and non-audit fees are jointly determined, a single-equation regression including both variables violates the crucial assumption that they have independent error terms. Accordingly, conclusions about their effects on underpricing based on single-equation estimation may be affected by their simultaneous equations bias. Therefore, we examine whether audit and non-audit fees are jointly determined at the time of IPOs using the following simultaneous equation system for audit and non audit fees:

$$\text{LnAFEE} = \alpha_1 + \delta_1 \text{ LnNAFEE} + \delta_2 \text{ Audit Period} + \delta_3 \text{ Board Independence}$$

$$+ \delta_4 \text{ Top5 Auditor dummy} + \delta_5 \text{ LnAsset} + \delta_6 \text{ Age} + \delta_7 \text{ Debt ratio}$$

$$+ \delta_8 \text{ Loss dummy} + \delta_9 \text{ Current Asset (\%)} + \delta_{10} \text{ Founder Ownership}$$

$$+ \delta_{11} \text{ VC dummy} + \delta_{12} \text{ AIM Market dummy} + \delta_{13} \text{ Bubble dummy}$$

$$+ \delta_{14} \text{ Internet dummy} + \delta_{15} \text{ Industry dummies} + \varepsilon_1 \qquad (2)$$

$$\text{LnNAFEE} = \alpha_2 + \gamma_1 \text{ LnAFEE} + \gamma_2 \text{ Founder/TMT Experience} + \gamma_3 \text{ Board}$$

$$\text{Independence} + \gamma_4 \text{ Top5 Auditor dummy} + \gamma_5 \text{ LnAsset} + \gamma_6 \text{ Age} + \gamma_7 \text{ Debt ratio} +$$

$$\gamma_8 \text{ Loss dummy} + \gamma_9 \text{ Current Asset (\%)} + \gamma_{10} \text{ Founder Ownership} + \gamma_{11} \text{ VC dummy}$$

$$+ \gamma_{12} \text{ AIM Market dummy} + \gamma_{13} \text{ Bubble dummy} + \gamma_{14} \text{ Internet dummy}$$

$$+ \gamma_{15} \text{ Industry dummies} + \varepsilon_2 \qquad (3)$$

The LnAFEE and LnNAFEE variables are the natural logarithm of audit and non-audit fees, respectively.

To estimate our simultaneous equation system, we need two explanatory variables that are unique in their direct effect on either audit or non-audit fees. We first use an *Audit Period* variable (i.e. the number of days within the latest audited period in the IPO prospectus), in the audit-fee model in equation (2). Consistent with prior research in Mayhew and Wilkins (2003), we expect audit firms to have more problems completing their audit over longer periods, which require a larger amount of work.[8] Hence, there is a positive association between audit fees and the audit period. Second, we use a Founder

[8] Mayhew and Wilkins (2003) refer to Coopers & Lybrand's *A Guide to Going Public* (1997), which states that: "audit fees will vary depending on such factors as the time the accountants must spend reviewing the registration statement, the level of requests from the underwriter for 'comfort,' the need to review quarterly data, and whether there are significant accounting issues to be resolved."

and Top Management Team (TMT) Experience variable which represents the number of current and past external directorships of founders and top management team over the five years prior to the IPO date, as an explanatory variable in the non-audit fee model in equation (3). This choice implies that wider external board experiences of founders and executives lead to a lower need for external non-audit services. We used Staiger and Stock (1997) test to verify the reliability of our instruments that require a greater than 10 F-test for the joint significance of the instruments in the first-stage of Two Stage Least Squares (2SLS) regressions. This test confirmed the strength of instruments for both audit and non-audit fees.

Previous studies provide conflicting arguments on the roles played by independent boards in affecting fees paid for external audit services. Carcello et al. (2002) document a positive relationship between board independence and audit fees. They argue that independent boards complement auditor's effort and oversight. This is consistent with Fama and Jensen (1983) who expect outside directors to enhance their reputational capital by demanding higher audit efforts. To the contrary, independent boards may provide a monitoring role which substitutes some of the monitoring provided by auditors and reduce the scope of their work and fees (Cohen and Hanno, 2000).

In line with Craswell et al. (1995), we expect the Top 5 Auditor dummy to be related to higher fees. This is consistent with Klein and Leffler (1981) and Shapiro (1983) who demonstrate that larger audit firms do not have incentives to perform low-quality service at high audit prices.

Audit and non-audit fees are also expected to increase with the amount of work related to IPO firm's characteristics. Hence, larger and older IPO firms are predicted to have high audit and non-audit fees, whereas internet IPO firms, usually small and young, have low fees. We also expect the Loss dummy variable to be negatively related to audit fees (Craswell and Francis, 1999), but positively related to non-audit fees. Consistent with Antle et al. (2004), we include current assets as a percentage of total assets and expect firms with higher current assets to require greater audit efforts. We also expect that firms with higher agency costs may purchase less non-audit services from their auditors, but demand higher audit services (Whisenant et al., 2003). Thus, both founder ownership and debt ratio are expected to positively affect audit fees, but to have a negative association with non audit fees.[9] Additionally, Mitra and Hussain (2006) argue that sophisticated shareholders actively monitor corporate affairs and induce firms to reduce the level of non-audit services in order to ensure that auditors maintain their objectivity. Venture capitalists (VCs) usually provide firms with their expertise thus reducing the need for non-audit services, but should require a higher effort in audit services to protect their own interests.

Finally, equations (2) and (3) also contain the Market dummy to control for differences in institutional characteristics and legal requirements between AIM and the Main market. Since a high flow of IPOs may affect the extent of competition in the auditing industry,

[9] Chan et al. (1995) show that firms with higher ownership concentration demand lower audit services using a sample of 985 UK listed firms in 1989.

the Bubble dummy is also added to control for changes in audit and non-audit services over time. Both equations control for industrial differences using industry dummies.

IV- Empirical Results

1. Descriptive Statistics

Table 1 provides the descriptive statistics by industry. Panel A shows a higher proportion of IT Business Support services (28.00%) consistent with the increase in the number of hi-tech firms going public over the recent period. For the remaining sample, our data exhibits a balanced distribution with regard to IPO firms from different industries.

Table 1 near here

Panel B provides the distribution of audit and non-audit fees per industry. The average total fee per industry ranges from £116,340 (IT, Business support services) to £534,780 (education, architecture and research services). A closer analysis of our data indicates that firms in industries with higher total fees (i.e. education, architecture and research services mining, oil, gaz and energy; and retail and wholesale trading) are likely to be older and have a higher leverage ratio. In addition, Panel B shows a higher proportion of non-audit fees, which reflects that firms usually demand additional services to prepare for their IPOs. This is particularly the case in education, architecture and research services.

Table 2 reports an average underpricing of 0.691, and a median value of 0.626, which reflects the skweness of the distribution. IPO firms pay an average audit fee of £65,466 and an average non-audit fee of £175,104. This is significantly lower than audit and non-audit fees paid by more mature firms in the UK (£452,000 and £500,000 respectively, Antle et al., 2006). The IPO firm's board includes 43.8% outside directors on average. In contrast with prior research, the proportion of IPO firms audited by the top 5 auditor is relatively low at 48%, which reflects the high competitiveness level of the audit industry for IPOs in the UK.[10]

Table 2 near here

On average, firms going public have total assets of £706 million and debt ratio of 48.9%. IPO firms are relatively young with an average age of 8.2 years and a median value of 4 years. A large number of firms (71.5%) have a negative net income during the last reported period prior to their IPOs, and they have current assets equal to 31.6% of their total assets on average.

Our sample includes a significant number of internet-related IPOs (32.1% of the total number) with IPOs mainly listed on AIM (80%). A significant percentage of firms went public during the bubble period 1999-2000 (53.1%). Also, founders retain 24.40% of the shares outstanding following the IPO date and 22.9% of firms are backed by VC firms.

[10] While this finding is almost equal to results in Bédard et al. (2000) who found that Big 6 audit 47% of IPOs in Quebec, it is in contrast with results in other countries: Big 5 audit 81.74% of IPOs in Taiwan (Chen et al., 2005); Big 8 audit 73.5% of IPOs in Singapore (Firth and Liau-Tan, 1998); Big 6 audit 85% of IPOs in the US (Hogan, 1997), and 71% of Canadian IPOs (Clarkson and Simunic, 1994).

The descriptive statistics for the instrument variables used in our 2SLS regressions of audit and non-audit fees are also shown in Table 2. This Table shows that the latest period audited by auditors is equal to 212.15 days on average (180 days on median), and the experience of both founders and top management team is equal to an average 15.52 external board positions.

2. Audit versus Non-Audit Fees

Table 3 presents the single-equation regression results of both audit and non-audit fees in Models (1a) and (2a) along with their simultaneous-equation regressions controlling for their endogenous determination (Models (1b) and (2b)).

Table 3 near here

The OLS regressions in Models (1a) and (2a) indicate a positive association between audit and non-audit fees ($p < 0.001$). However, using a Hausman (1978) test of exogeneity to verify whether both fees are jointly determined, we confirm that both LnAFEE and LnNAFEE are endogenously related ($p<0.01$ and $p<0.02$ respectively). Therefore, the residual "unexplained" terms in both equations (2) and (3), ε_1 and ε_2, are correlated; the correlation coefficient is negative and equal to -0.52 ($p < 0.001$). This suggests that the OLS estimates of both LnAFEE and LnNAFEE in Models (1a) and (2a) are biased, and their effects on the IPO firm's value would also be affected by their

simultaneous relationship. Further investigations in Models (1b) and (2b) include a simultaneous estimation of the two structural equations of LnAFEE and LnNAFEE, and use the 2SLS approach to control for the endogenous determination of both fee variables.

The 2SLS estimates in Models (1b) and (2b) show no significant association between both variables. This suggests that, after controlling for the endogenous determination of audit and non-audit fees, there is either no knowledge spillover or equal spillover between both fee variables. In line with findings by Whisenant et al. (2003) in the US, our results reject the presence of economies of scope between audit and non-audit fees.[11]

Consistent with our predictions, Models (1a,b) and (2a,b) show evidence of higher audit fees in firms with longer *Audit period* ($p < 0.001$), and lower non-audit fees in firms with more experienced founders and top management team ($p < 0.001$). The longer the latest audited period, the more expensive the audit effort. Similarly, firms with more internal expertise of founders and managers, have a lower need for non-audit expertise. Models (1b) and (2b) provide positive and significant associations between board independence and both audit and non-audit fees ($p < 0.1$ and $p < 0.05$, respectively). More independent boards are more likely to act as monitors and protect their reputational capital by demanding more extensive audit efforts, which is consistent with results in Carcello et al. (2002). In line with prior research by DeAngelo (1981), the auditor reputation (the Top 5

[11] Controlling for the simultaneous determination of audit and non-audit fees, Whisenant, et al. (2003) find no relation between audit and non-audit fees in more mature US firms. They infer that there is either no knowledge spillover or equal knowledge spillover between audit and non-audit services. Using different data and different research design, Antle, et al (2006) include the effect of financial reporting and address the issue of endogeneity between both fees in the UK. They find evidence consistent with knowledge spillovers (or economies of scope) from auditing to non-audit services, and vice versa.

Auditor dummy) is also positively related to the fee variables. This suggests that more reputable auditors charge higher audit fees for a high-quality audit and solicit higher fees for non-audit services.[12]

Both fee variables are positively related to the age variable, which suggests that auditors encounter more problems in auditing older firms and thus require higher fees. In addition, older firms may need more restructuring, and thus generate higher non-audit fees. The debt ratio is also positively related to the two fee variables. Firms encountering more significant financial constraints, i.e. higher financial leverage, are more likely to increase their efforts to generate and disclose accounting-related information in the time of IPO (Holland, 2005).

Audit fees are lower in internet-related firms, whereas there is no significant relationship between the internet dummy and non-audit fees. Since the Main Market has more stringer listing requirements, both audit and non-audit fees are significantly higher in the Main Market's IPOs ($p < 0.001$). Venture capitalists also provide firms with their management support thus reducing the need for non-audit services, which may explain a negative association between VC dummy and non-audit fees ($p < 0.1$).

[12] In addition to the experience of founders and executives directors, further empirical investigations add the experience of independent directors on board and controlling for the simultaneous determination of audit and non-audit fees. More experienced independent directors may provide their firms with higher expertise and reduce the need for non-audit services. Although not shown in the paper, we find a negative association between non audit fees and the cumulative experience of founders, executives and non executives on board. However, there is no significant change in our results concerning the association between audit and non-audit fees. Moreover, our results indicate that although more independent boards increase non-audit fees, the more experienced outside directors lead to lower non-audit services. The results are available upon request.

In terms of industry membership, Models (1b) and (2b) indicate that IPOs in mining, oil, gaz, energy and IT business support services have lower audit fees, but higher non-audit fees ($p < 0.1$).

4. Underpricing, Board Independence and the Simultaneous Determination of Fees Paid to Auditors

Model (3) - Table 4 presents the 2SLS regression of underpricing using the fitted value of LnAFFE and LnNAFEE in Models (1) and (2). This model controls for the simultaneous determination of audit and non-audit fees. Consistent with hypotheses (1) and (2), Model (3) shows that underpricing is negatively related to audit fees ($p < 0.001$), and positively affected by non-audit fees ($p < 0.1$). An additional 10% audit fee reduces underpricing by 8.3%, and a 10% increase in non-audit fee increases underpricing by 1.9%. This suggests that audit fees play both certification and information roles, whereas non-audit fees are likely to reduce the quality of accounting figures, e.g. earnings and accruals.

Table 4 near here

In line with prior research, there is negative association between underpricing and board independence ($p < 0.001$), which reflects the monitoring role played by independent boards. Model (3) also exhibits a negative association between the Top Auditor dummy and underpricing ($p < 0.1$), which is consistent with prior results on the certification role played by auditor reputation. Underpricing is positively associated with the Loss dummy

($p < 0.05$). It is higher following a positive market return ($p < 0.001$) and higher market volatility ($p < 0.05$).

Model (5) in Table 5 investigates the differential effect of board independence on the association between underpricing and both audit and non-audit fees. It controls for the interaction effect between board independence and the fees paid to auditors on firm value. It uses the fitted values of audit and non-audit fees and a board independence dummy which is equal to 1 if board independence is higher than the median value of 0.429 zero otherwise. This model indicates that underpricing is lower with more independent boards ($p < 0.10$). Underpricing decreases in both audit and non-audit fees paid by firms with more independent boards. The interaction variable with audit fees is significantly higher compared to non-audit fees, which suggests that investors rely more heavily on the informational effect of the audit services, whereas non-audit fees related to organizational and other consulting services remain auxiliary. This suggests that more independent boards may demand higher auditor efforts which reduce underpricing. Therefore, a more independent board is a strong governance factor which reinforces the reliability of the accounting system and controls for the quality of non-audit services. It complements the efforts of auditors and acts as an effective monitor at the time of an IPO.

Table 5 near here

Model (5) also indicates that underpricing decreases in audit fees paid by firms with less independent boards, whereas it increases in non-audit fees paid by firms with less independent boards. Audit fees may thus play a monitoring role which compensates the weaknesses of the boardrooms. Conversely, the higher non-audit fees in weak corporate governance are likely to threat auditor independence this increasing underpricing.

5. Further investigations

Alternative Measures of IPO Discount

Some researchers, however, argue that the uncertainties and information asymmetries cannot be resolved during the first day of trading, and suggest using longer-term proxies for IPO valuation and the stock market discount (Aggarwal and Rivoli, 1990; Loughran, Ritter, and Rydqvist, 1994). Hence, further investigations rely on more recent research in Chahine (2004) and Roosenboom and Schramade (2006), and uses valuation multiples as an alternative proxy for IPO value. We use the offer price per share normalized by the pre-IPO book value per share obtained from the last pre-IPO financial statement or interim report included in the firm's listing prospectus. The P/B is adjusted by the average P/B ratio calculated for all IPOs during the 12-month period prior to the IPO date. One limitation of this proxy is that a high P/B ratio may also reflect the future growth opportunities of IPO firms (Danielson and Dowdell, 2001).

Model (5) includes the 2SLS regression of the adjusted price-to-book ratio using the fitted value of LnAFFE and LnNAFEE, and indicates a positive and significant

association between the adjusted price-to-book ratio and both audit and non-audit fees ($p < 0.001$). An additional 10% audit fee increases the adjusted price-to-book by 6.6%, and a 10% increase in non-audit fee improves the adjusted price-to-book value by 3.2%.[13] Moreover, there is evidence that IPO value is positively related to board independence, which may result from the monitoring role provided by independent directors.

Table 6 near here

Model (6) examines the effect of interaction between board independence and fees paid to auditors on the firm's value. This indicates that the Adjusted price-to-book ratio increases in both audit and non-audit fees paid by firms with more independent boards, whereas it is not affected by the amount of fees paid by firms with less independent boards. This suggests that more independent boards are effective monitors. More independent boards that aim to protect the best interest of shareholders may demand higher auditor efforts leading to a greater firm value, in line with our previous findings.

Underpricing and the monitoring role of Venture Capital firms

As mentioned earlier, Larker and Richardson (2004) find a positive association between non-audit fees and discretionary accruals in smaller firms with lower institutional holdings and greater insider holdings. They argue that the threat to auditor independence from auditor compensation is greatest for small firms with weak corporate governance structures. In addition to board independence, Table 7 controls thus for the monitoring

[13] This is consistent with Krishnan and Lai (2005) who focus on consulting fees related to financial information system (FIS) and find a positive and significant association between non-audit fees related to the FIS and Tobin's q used as a proxy for firm value.

role played by venture capital firms, the typical form of institutional investor in IPO firms.

Table 6 near here

Model (7) indicates that underpricing is negatively related to audit fees in both VC and non-VC backed IPOs (at the 5% and 1% levels, respectively). The negative relationships are not significantly different, which suggests that audit fees do provide information and certification in all IPO firms.

Model (7) also shows a positive association between underpricing and non-audit fees in non-VC backed IPOs, whereas the coefficient is not significantly different from zero in VC-backed IPOs. This suggests that the absence of a venture capital firm is likely to increase the threat to auditor independence, thus increasing underpricing.

Model (8) complements prior results and examines the differential effect of VC dummy on the association between IPO value and both audit and non-audit fees. The IPO value is positively related to the interaction variables between audit fees and both VC and non-VC dummies. It is also positively related to non-audit fees in VC-backed IPOs, whereas these fees do not have significant effects in non-VC backed IPOs. Similar to board independence, Model (7) confirms complementary role played by VCs as monitors, especially in IPOs paying high non-audit fees.

V- Conclusion

Although prior research has addressed the inter-relationship between the IPO underpricing and audit fees, it did not investigate the endogeneity of spillovers between non-audit and audit fees. This paper uses the simultaneous equation system methodology to account for the joint determination of both audit and non-audit fees. Since an auditor may "too easily approve financial disclosures to win valuable consulting contracts" (New York Times, January 2003)[14], evidence of the absence of the association between audit and non-audit fees suggests that there is either no knowledge spillover or equal knowledge spillover between the two fees. This may reflect the higher independence of auditors when determining costs of their services in a competitive audit industry and more stringent legal requirements related to IPOs. It also suggests that both fees are likely to be an outcome of factors other than the economies of scope, i.e. they are related to filing requirements rather than client-specific rents. Therefore, they should have a higher signaling effect in terms of the firm's value. This may be also related to the litigation costs prompting the auditors to avoid risky IPOs (Feltham et al., 1991).

Our empirical findings indicate a negative (positive) association between underpricing and audit fees (non-audit fees). This suggests that audit fees play both certification and informational roles, whereas non-audit fees add uncertainty to the quality of earnings. More importantly, empirical investigations indicate a negative association between underpricing and both audit and non-audit fees in IPO firms with more independent

[14] "Lone Ranger of Auditors Fell Slowly Out of Saddle," The New York Times, Business Day, April 20, 2002, page C1.

boards. This suggests that corporate governance positively affects the quality of both services in IPOs. There is also evidence of a negative (positive) association between underpricing and audit (non-audit fees) in IPOs with less independent boards. Hence, this paper shows that the credibility of services provided by external auditors may be reinforced by the credibility of internal decisions made by IPO firms, i.e. better corporate governance mechanisms.

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Table 1 –Descriptive Statistics by Industry

Panel A - Sample Distribution by Industry

Industry	N	%
Mining, Oil, Gas and Energy	57	15.20%
IT Business Support Services	105	28.00%
Biotech, Pharmaceutical and Health-services	38	10.13%
Retail and Wholesale Trading	31	8.27%
Manufacturing of Electronics, others	45	12.00%
Media, Communication and Transport	42	11.20%
Leisure and Entertainment	19	5.07%
Educational, Architectural and Research Services	38	10.13%

Panel B – Average Composition of Fees Paid to Audit Firms (Median Values are in Parentheses)

	Total Fees (mean 000 £)	Audit Fees (mean 000 £)	Audit Fees %	Non-Audit Fees (mean 000 £)	Non-Audit Fees %
Mining, Oil, Gas and Energy	234.39	55.66	23.75%	178.72	76.25%
IT Business Support Services	116.34	39.50	33.96%	76.83	66.04%
Biotech, Pharmaceutical and Health-services	183.27	49.58	27.05%	133.68	72.94%
Retail and Wholesale Trading	263.75	123.82	46.95%	139.93	53.05%
Manufacturing of Electronics, others	406.45	95.47	23.49%	310.97	76.51%
Media, Communication and Transport	195.33	72.67	37.21%	122.66	62.79%
Leisure and Entertainment	141.21	71.32	50.50%	69.89	49.50%
Educational, Architectural and Research Services	534.78	73.77	13.79%	461.01	86.21%

Audit fee = fees billed for professional services rendered for audits of the latest sub-period in the IPO prospectus (in £ thousands).

Non-Audit fee = fees billed for auditor-provided non-audit services in the IPO prospectus (in £ thousands).

Table 2 – Descriptive Statistics

Nbr	Variable	Mean	Median	Std-dev
1	Price-to-book	2.691	0.626	7.050
1	Initial Return	0.189	0.051	0.877
2	Audit fee (in 000 £)	65.466	24.000	168.059
3	Non-Audit fee (in 000 £)	175.104	49.000	925.952
4	Board Independence	0.438	0.429	0.185
5	Top5 Audit dummy	0.480	0.000	0.500
6	Total Asset (in Million)	706.549	36.233	6216.532
8	Age	8.214	4.000	17.023
7	Debt ratio	0.489	0.374	0.964
9	Loss dummy	0.715	1.000	0.452
10	Current Asset (%)	0.316	0.227	0.281
14	Founder Ownership	24.404	19.825	22.602
15	VC dummy	0.229	0.000	0.421
12	Market Type (AIM=1, MAIN =0)	0.800	1.000	0.401
13	Underwriter Reputation	0.027	0.014	0.034
14	Market Return (One Month BHR)	-0.022	-0.014	0.099
15	Market Volatility (One Month)	0.010	0.007	0.008
16	Bubble dummy	0.531	1.000	0.500
11	Internet dummy	0.321	0.000	0.467
16	Audit Period (in days)	212.147	180.000	117.771
17	Founders & TMT Experience (Year)	15.515	10.000	16.238

Underpricing	= the first-day return at the time of IPOs
Audit fee	= audit fee in (in 000 £)
Non-Audit fee	= non-audit fee in (in 000 £)
Board Independence	= percentage of independent directors on board.
Top5 Audit dummy	= dummy variable equal to One for a big five auditor
Total Asset	= total asset value in the latest period prior to the IPO date
Age	= number of year since the inception of the IPO firm
Debt ratio	= total liabilities over total asset in the latest period prior to the IPO date
Loss dummy	= dummy variable equal to One if a negative net income in the latest period prior to the IPO date
Current Asset (%)	= total current asset as a percentage of the total asset in the latest period prior to the IPO date
Founder Ownership	= post-IPO founder ownership
VC dummy	= dummy variable equal to 1 for VC-backed IPOs, Zero otherwise
Market Type	= dummy variable equal to 1 if IPO in the AIM. Zero if the MAIN market
Underwriter Reputation	= The cumulative market share over the studied period
Market Return	= the buy-and-hold return of the IPO market index over an one month period prior to the IPO date
Market Volatility	= the standard deviation of the daily return of the IPO market index over an one month period prior to the IPO date
Bubble dummy	= dummy variable equal to 1 for IPOs during the bubble period 1999-2000, Zero otherwise
Internet dummy	= dummy variable equal to 1 if internet-related firm, Zero otherwise
Audit Period	= number of days included within the latest period provided within the IPO prospectus
Founders & TMT Experience	= total number of current and past external directorships of founders and top management team over the five years prior to the IPO date

Table 3 - Audit and non audit fees determination: A simultaneous analysis

	LnAFEE	LnNAFEE	LnAFEE	LnNAFEE
	Single-Equation Specification		Simultaneous-Equation Specification	
	OLS	OLS	2SLS	2SLS
	(1a)	(2a)	(1b)	(2b)
Constant	2.200***	0.229	3.241***	3.433***
	(0.322)	(0.640)	(0.358)	(0.623)
LnAFEE		0.916***		0.101
		(0.081)		(0.140)
LnNAFEE	0.352***		0.011	
	(0.038)		(0.051)	
Founder & TMT Experience		-0.028***		-0.030***
		(0.006)		(0.006)
Audit Period	0.001***		0.002***	
	(0.000)		(0.000)	
Board Independence	0.264	0.845**	0.118*	0.952**
	(0.244)	(0.388)	(0.070)	(0.462)
Top5 Auditor dummy	0.134	0.197	0.339***	0.529***
	(0.091)	(0.148)	(0.113)	(0.180)
LnAsset	0.043	-0.036	0.046	0.008
	(0.042)	(0.057)	(0.044)	(0.060)
Age	0.005**	0.002	0.010***	0.012*
	(0.003)	(0.006)	(0.003)	(0.007)
Debt ratio	0.052**	0.036	0.100***	0.138***
	(0.026)	(0.033)	(0.030)	(0.038)
Loss dummy	-0.018	0.078	0.001	0.069
	(0.118)	(0.177)	(0.143)	(0.220)
Current Asset (%)	-0.012	0.132	0.000	0.153
	(0.169)	(0.263)	(0.214)	(0.332)
Founder Ownership	0.003	0.000	0.003	0.003
	(0.002)	(0.003)	(0.002)	(0.004)
VC dummy	-0.019	-0.233*	-0.131	-0.317*
	(0.117)	(0.140)	(0.151)	(0.184)
Market dummy	-0.425***	0.029	-0.673***	-0.640***
	(0.131)	(0.180)	(0.175)	(0.246)
Bubble dummy	0.128	-0.119	0.169	0.024
	(0.094)	(0.135)	(0.123)	(0.178)
Internet dummy	-0.203**	0.019	-0.272**	0.228
	(0.097)	(0.158)	(0.116)	(0.188)
Mining, oil, gas, energy	-0.416**	0.690**	-0.284*	0.410*
	(0.169)	(0.304)	(0.169)	(0.240)
Business support services	-0.395***	0.534*	-0.298*	0.269*
	(0.144)	(0.287)	(0.159)	(0.155)
Manufacturing of electronics	-0.144	0.288	-0.078	0.267
	(0.165)	(0.326)	(0.188)	(0.383)
Biotech, pharmaceutical	-0.039	0.492*	0.185	0.635*
& health-services	(0.213)	(0.297)	(0.251)	(0.373)
Retail and wholesale trading	-0.071	0.234	0.006	0.265
	(0.162)	(0.334)	(0.171)	(0.392)
Media & communication	-0.118	0.192	-0.131	0.081
	(0.198)	(0.357)	(0.214)	(0.421)
Leisure & entertainment	0.028	0.292	0.180	0.431
	(0.240)	(0.427)	(0.258)	(0.491)
Adjusted R-squared	0.522	0.498	0.484	0.429
F-statistic	16.712	15.227	14.592	12.318
Prob(F-statistic)	0.000	0.000	0.000	0.000

White Heteroskedasticity-Consistent Standard Errors & Covariance
***, **, *: respectively significant at the 1%, 5%, and 10% level.
LnAFEE and LnNAFEE are the natural logarithm of audit and non-audit fees respectively.

Table 4 – The Determinants of Underpricing: Auditors' Services and Board Independence

	Expected Sign	Ln(1+Underpricing) 2SLS (3)
Constant		0.238***
		(0.089)
LnAFEE	-	-0.083***
		(0.024)
LnNAFEE	+	0.019*
		(0.011)
Board Independence	-	-0.234***
		(0.079)
Top5 Auditor dummy	-	-0.046*
		(0.028)
LnAsset	-	-0.012
		(0.012)
Age	-	-0.001
		(0.001)
Internet dummy	+	0.019
		(0.036)
Debt ratio	-	-0.002
		(0.010)
Loss dummy	+	0.073**
		(0.036)
Current Asset (%)	-	-0.035
		(0.049)
Market dummy (AIM=1, Main=0)	+	0.012
		(0.036)
Founder Ownership	?	-0.001
		(0.001)
VC dummy	?	-0.033
		(0.029)
Underwriter Reputation	-	-0.065
		(0.415)
Market Return	+	0.445***
		(0.160)
Market Volatility	+	4.864**
		(2.458)
Bubble dummy (99/00)	+	0.002
		(0.036)
Industry dummies		Yes
Adjusted R-squared		0.179
F-statistic		2.883
Prob(F-statistic)		0.000

White Heteroskedasticity-Consistent Standard Errors & Covariance
***, **, *: respectively significant at the 1%, 5%, and 10% level.
LnAFEE and LnNAFEE are the natural logarithm of audit and non-audit fees respectively.

Table 5–The Effect of Board Independence on the association between Fees paid to Auditors and Underpricing

	Ln(1+Underpricing) 2SLS (4)
Constant	0.142*
	(0.082)
More Independent Board dummy	-0.044*
	(0.027)
LnAFEE x Less Independent Board dummy	-0.061*
	(0.036)
LnAFEE x More Independent Board dummy	-0.117***[(a)]
	(0.026)
LnNAFEE x Less Independent Board dummy	0.052***
	(0.018)
LnNAFEE x More Independent Board dummy	-0.020*[(a)]
	(0.012)
Top5 Auditor dummy	-0.044*
	(0.026)
LnAsset	-0.011
	(0.012)
Age	-0.000
	(0.001)
Internet dummy	0.005
	(0.035)
Debt ratio	-0.004
	(0.010)
Loss dummy	0.076**
	(0.037)
Current Asset (%)	-0.024
	(0.048)
Market dummy (AIM=1, Main=0)	0.014
	(0.036)
Founder Ownership	0.000
	(0.001)
VC dummy	-0.035
	(0.030)
Underwriter Reputation	-0.121
	(0.399)
Market Return	0.486***
	(0.159)
Market Volatility	4.009*
	(2.183)
Bubble dummy (99/00)	-0.004
	(0.038)
Industry dummies	Yes
Adjusted R-squared	0.175
F-statistic	2.584
Prob(F-statistic)	0.000

White Heteroskedasticity-Consistent Standard Errors & Covariance
***, **, *: respectively significant at the 1%, 5%, and 10% level.
[(a)]: significantly different at the 1% level.

Table 6– IPO Value, Audit and Non-Audit fees, and Board Independence

	Adj. P/B ratio	
	2SLS	2SLS
	(5)	(6)
Constant	1.032***	1.129***
	(0.108)	(0.097)
LnAFEE	0.066***	
	(0.016)	
LnNAFEE	0.032***	
	(0.011)	
Board Independence	0.277***	
	(0.090)	
More Independent Board dummy		0.057**
		(0.027)
LnAFEE x Less Independent Board dummy		0.028
		(0.027)
LnAFEE x More Independent Board dummy		0.107***
		(0.020)
LnNAFEE x Less Independent Board dummy		0.021
		(0.017)
LnNAFEE x More Independent Board dummy		0.043***
		(0.014)
Top5 Auditor dummy	0.026	0.027
	(0.032)	(0.033)
LnAsset	0.000	0.002
	(0.009)	(0.009)
Age	0.001	0.001
	(0.001)	(0.001)
Debt ratio	0.004	0.004
	(0.008)	(0.009)
Loss dummy	0.076**	0.070**
	(0.032)	(0.033)
Current Asset (%)	-0.032	-0.026
	(0.052)	(0.054)
Founder Ownership	0.000	0.000
	(0.001)	(0.001)
VC dummy	0.010	0.016
	(0.029)	(0.030)
Market dummy	0.003	0.009
	(0.048)	(0.050)
Bubble dummy	0.066**	0.072***
	(0.028)	(0.028)
Internet dummy	0.100***	0.091***
	(0.027)	(0.028)
Industry dummies	Yes	Yes
Adjusted R-squared	0.173	0.157
F-statistic	3.198	2.900
Prob(F-statistic)	0.000	0.000

White Heteroskedasticity-Consistent Standard Errors & Covariance
***, **, *: respectively significant at the 1%, 5%, and 10% level.
LnAFEE and LnNAFEE are the natural logarithm of audit and non-audit fees respectively.

Table 7– The effect of Venture Capital on the association between Fees paid to Auditors

	Ln(1+Underpricing) 2SLS (7)	Adj. P/B ratio 2SLS (8)
Constant	0.233***	1.094***
	(0.090)	(0.110)
VC dummy	-0.031	0.022
	(0.030)	(0.029)
LnAFEE x non-VC dummy	-0.089***	0.062**
	(0.034)	(0.027)
LnAFEE x VC dummy	-0.069**	0.065***
	(0.030)	(0.022)
LnNAFEE x non-VC dummy	0.023*	0.004
	(0.013)	(0.017)
LnNAFEE x VC dummy	0.004	0.045***
	(0.016)	(0.014)
Board Independence	-0.236***	0.130*
	(0.080)	(0.077)
Top5 Auditor dummy	-0.044*	0.033
	(0.026)	(0.034)
LnAsset	-0.013	-0.001
	(0.012)	(0.009)
Age	-0.001	0.001
	(0.001)	(0.001)
Internet dummy	0.020	0.099***
	(0.036)	(0.027)
Debt ratio	-0.003	0.005
	(0.010)	(0.009)
Loss dummy	0.076**	0.077**
	(0.038)	(0.033)
Current Asset (%)	-0.031	-0.026
	(0.049)	(0.054)
Market dummy (AIM=1, Main=0)	0.012	0.001
	(0.036)	(0.049)
Founder Ownership	-0.001	0.000
	(0.001)	(0.001)
Underwriter Reputation	-0.080	
	(0.398)	
Market Return	0.456***	
	(0.161)	
Market Volatility	4.930**	
	(2.461)	
Bubble dummy (99/00)	-0.002	0.070***
	(0.038)	(0.027)
Industry dummies	Yes	Yes
Adjusted R-squared	0.181	0.154
F-statistic	2.687	2.538
Prob(F-statistic)	0.000	0.000

White Heteroskedasticity-Consistent Standard Errors & Covariance
***, **, *: respectively significant at the 1%, 5%, and 10% level.
LnAFEE and LnNAFEE are the natural logarithm of audit and non-audit fees respectively.