The Pricing of Initial Audit Engagements by Big 4 and Leading Mid-tier Auditors

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ABSTRACT

Against a backdrop of increasing supplier concentration, concerns over auditor independence, big 4 dominance of large firm audits and the capacity of mid-tier auditors to compete, this paper presents new evidence on the pricing of initial audit engagements by big 4 auditors relative to their next four largest mid-tier (mid 4) counterparts. Estimates for separate hedonic pricing models are reported, together with evidence in relation to the recovery of both audit and consultancy fees, which is generally consistent with discounting (low-balling) being a competitive outcome. In contrast to recent U.S. evidence, relatively large discounts are evident in the Main Market for larger clients switching between big 4 auditors; with smaller AIM listed firms switching from big 4 to mid 4 auditors attracting smaller discounts. There is no evidence of price rivalry between big 4 and mid 4 auditors for initial engagements in the private corporate sector. Nor is there any evidence that fees were discounted to entice smaller private firms to opt for voluntary audits.

Keywords: Initial audit engagements; discounts; leading auditors; quoted market; private companies; voluntary audits

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1. INTRODUCTION

Following corporate scandals, the demise of Arthur Andersen and disquiet over auditor independence, interest in the market for audit services across national boundaries has increased substantially in recent years (e.g., Fearnley and Beattie, 2004; and Humphrey et al., 2007). Concern has been expressed regarding increasing market concentration, the problems that would occur should a big 4 auditor fail, and whether leading mid-tier auditors are capable of acting as viable substitutes for the big 4. The Oxera (2006) report concluded (p.i) that reputation was a key factor favouring the choice of big 4 auditors in the heavily concentrated UK quoted market. Furthermore, a similar report for the European Commission (EC, 2006, p. xxi) observed that the market for large auditees was dominated by the big 4, with their mid-tier counterparts facing entry barriers, such as 'reputation, capacity and breadth of their networks'.

Whilst a number of research papers have focused on some of these important issues (e.g., McMeeking et al. 2007; and Abidin et al. 2010), relatively few have examined auditor switching and fee discounting (or low-balling) in quoted markets (e.g., Ettredge and Greenberg, 1990; Pong and Whittington, Gregory and Collier, 1996 Ghosh and Lustgarten, 2006). Since these original studies, it is well documented that on the supply side quoted markets are substantially more concentrated and the big 8 have halved in number (e.g., Oxera, 2006; and EU, 2006). On the demand side, alongside globalisation and the growth of multinational companies (Zanfei, 2005), there has been an increase in size (concentration) of leading UK quoted firms (Chelley-Steeley, 2008). Against this backdrop, this paper provides new evidence on the pricing of initial audit engagements in both the UK quoted and private corporate sectors. Amongst other things, it compares the findings with those of the earlier UK studies when the audit market, *prima facie*, had more competitive characteristics (Beattie and Fearnley, 1994; and Pong, 1999). Evidence is also provided in relation to the 'recovery' of both audit and consultancy fees in a later sample of matched companies.

The UK studies of Pong and Whittington (1994) and Gregory and Collier (1996) employed data to the years 1988 and 1991 respectively. Since the UK audit market has undergone substantial change in the intervening years, a primary aim of the paper is to provide new evidence on whether price competition is a feature of a market with increasing corporate and supplier concentration and decreasing auditor choice (in terms of the

number of 'big' auditors at least). Because of high big auditor concentration and the lack of choice in most quoted markets (Oxera, 2006; and EC, 2006) there is regulatory concern that there may be detrimental (e.g., monopoly or oligopolistic) supplier power, with implications for the efficient operation of the market. However, the fact that the big 4 tend to monopolise the audits of the largest companies (in the sense of being the only 'available' suppliers) does not *per se* imply either collusive pricing or low-balling. The increase in concentration, and its oligopolistic structure in the supply of audits to the largest companies, may have positive (e.g., economies of scale and scope), neutral or negative effects on competition[1] (Francis, 1984; and Beattie et al. 2003). It is essentially an empirical issue to determine the dynamics of the market in this respect. For instance, as with supermarkets, rather than oligopolistic (collusive) pricing behaviour resulting, there may be an increase in (price) competition amongst the big 4 (Baumol, 1982) to secure the relatively high returns associated with the audits of the largest quoted firms. Despite the burgeoning literature relating to audit pricing, perhaps testifying to continuing professional and regulatory concerns, there is little multivariate research on the pricing of initial engagements in European markets; and no detailed research relating to the private corporate market.

DeAngelo (1981) defines low-balling as charging an audit fee which is below start-up costs and normal profits. The Oxera report (2006, p.ii) commented that there is widespread concern 'about auditor independence and quality'. DeAngelo (1981) and Ghosh and Lustgarten (2006) note that there is regulatory and professional concern in the U.S. that low-balling may impair auditor independence; with Gregory and Collier (1996), Beattie et al. (2003) and Abidin et al. (2010) highlighting similar concerns in the UK. As far back as 1996, an EU Green Paper (EU, 1996, p.21) stated 'the growing intensity of competition for audit … and especially for the audit of large ''prestige'' companies, is also a cause of concern. There is no doubt that competition sometimes results in low-cost and perhaps even below-cost tenders'. Fearnley and Beattie (2004, p.125) also report that the Accounting Review Board had received evidence that showed 'that competitive tendering has reduced audit fees, forced out waste and made firms focus on risk. There are also beliefs that audit quality may have suffered as a result of lower fees'.

There is also some UK anecdotal evidence that the big 4 may have been targeting mid-tier auditees via 'predatory pricing'. Commenting in *Accountancy Age*, Williams (2007) cites an example of a mid-tier

[1]For example, Beattie et al. (2003, p.252) articulate how industrial economics is moving away from a classical interpretation of the impact of concentration on competition; such that 'the detrimental effects of rising concentration are less clear cut'. Francis (1984, p.134) also commented, after analysing the (then) available evidence, 'an oligopolistic (or concentrated) market structure does not necessarily imply the occurrence of monopolistic pricing. Rather, pricing will be a function of the level of collusion among the dominant firms'.

accounting firm losing an audit to a big 4 counterpart, where the 'maximum fee' the mid-tier firm 'asked for was a third of the initial price of the company's auditors'. As noted by Willcock (1995), a spokesperson for a different mid-tier firm commented 'low-balling endangers the whole of the profession and may lead to a lowering of standards'. Williams (2007) also suggested that 'significant private companies … are regularly targeted by the Big Four.' Hence, in addition to having academic interest in terms of, *inter alia*, testing new hypotheses (Section 2), this study also has import for auditors, the accounting profession and regulators. Auditees (and more specifically audit committees) may also be interested in evidence relating to fee discounting, since audit switching is a relatively rare event and it is perhaps difficult for them to analyse the pricing behaviour of their counterparts systematically. It may be of particular interest in the quoted market where choice is constrained. For example, the Oxera report (2006, p. v) observed 'over one-third of the FTSE 350 audit committee chairs surveyed by Oxera do not feel that their company has sufficient choice of auditor'.

Given the present interest in big 4 auditors and their mid-tier counterparts as evidenced above, the current paper focuses on auditor switching and the pricing of initial engagements by leading (the top 8) auditors in the UK quoted market. The research concentrates on the largest four mid-tier (hereafter referred to as mid 4) auditors as they are clearly differentiated from their other mid-tier counterparts (Section 3), and are recognised as the big 4's closest competitors and potential (perhaps via mergers) future substitutes. It is therefore of particular interest to compare their pricing and switching behaviour relative to the big 4. More specifically, they are best placed to compete for the audits of larger firms, as well as having a high brand reputation to compete against the big 4 for smaller clients in both the public and private corporate sectors. In this context, it is of interest to note that a UK merger occurred in 2007 between Grant Thornton (the largest mid-tier firm) and its smaller counterpart, RSM Robson Rhodes. Commenting on the Grant Thornton website, the CEO of the post-merged firm stated 'it is also a boost to our efforts to break down those market perceptions which would not naturally associate Grant Thornton with the larger public audit market. We have considerably added to our firepower to consistently challenge the Big 4 in key areas'.

Leading mid-tier auditors and their big 4 counterparts are also the focus of concurrent US research. Following the demise of Arthur Andersen and the enactment of Sarbanes-Oxley, Cassell et al. (2008) report an improvement in investor perceptions of the credibility of financial reporting by the three largest mid-tier auditors. They conclude (p.30) 'Our results also suggest that future research examining differences in the characteristics of Big N and non-Big N audit firms or their audits should consider examining the Second-Tier

(as defined above) separately from other non-Big N audit firms.' Krishnan et al. (2008, p. 24) report that the earnings management of U.S. firms audited by the four largest second tier auditors are 'at least as conservative as or more conservative than the Big 4 firms in terms of the accrual accounting choices that they allow their clients to make.'

The current paper adds to extant research by examining the pricing of initial audit engagements and the characteristics of UK companies switching to big 4 and mid 4 auditors. Furthermore, as well as estimating pooled models in line with current research, I also estimate hedonic (quality adjusted) pricing models (Simunic, 1980), where separate parameters are derived from the individual sub-samples of big 4 and mid 4 auditees. This methodology is followed for two reasons: (i) each portfolio acts as controls against which to assess fee variations for initial engagements for the same group (quality) of auditors; and therefore eradicates potential (e.g., selection) bias impacting on discount estimates; and (ii) existing evidence suggests that the pricing behaviour of big 4 auditors differs from their mid-tier counterparts, indicating that separate models which allow regression coefficients to vary may be more appropriate. Specifically, I provide UK evidence relating to the hypothesis (and supporting U.S. evidence) of Ghosh and Lustgarten (2006) that switches between big 4 auditors in quoted markets might be expected to reveal lower discounts if they compete for relatively large auditees on a non-price oligopolistic basis. I test this hypothesis using the conventional pooled modelling approach employed by Ghosh and Lustgarten (2006), together with the more exacting big 4 and mid 4 hedonic model specifications.

I also extend previous research by refining the variables used to assess the type of auditor change according to whether firms were previously audited by big 4, mid 4, other mid-tier and smaller auditors. The paper also provides new evidence relating to initial engagements in the private corporate sector. Although the quoted market is of key import, according to *Companies House Registry* statistics, private firms comprised 99% of all live UK companies in 2008. It is also appears, *ex ante,* a more competitive market, with big 4 and mid 4 auditors having comparatively small market shares[2], and with auditees in general being more closely held and having lower litigation risk than their public or quoted counterparts (Chaney et al., 2004; and Clatworthy and Peel, 2007). In this context, Chaney et al. (2004, p.52) contend that private firms may have different audit demand and supply functions from their quoted counterparts; and that 'we believe private firms provide an excellent setting to identify and evaluate new dimensions, such as the cost of providing audit services, along

[2]For example, Clatworthy and Peel (2007) reported that only 7.8% of a large sample of private firms was audited by the big 4.

which audit markets could potentially be segmented.' An examination of the private firms also enables a powerful test to be conducted in relation to Ghosh and Lustgarten's (2006) hypothesis that discounts are expected to be higher in more competitive 'atomistic' markets (Section 2). It is also a particularly interesting time to examine pricing behaviour in this market. Since 1993, when small private firms first became eligible for audit exemption, the size criteria for mandatory audits have been progressively relaxed; such that the data in this study coincides with a period when 81.8% of UK companies had exercised their right not to have a statutory audit (Iwasaki, 2008). I provide new evidence on whether audit fees are discounted to encourage smaller private firms to undertake voluntary audits and/or switch auditors.

In summary, there is considerable concern regarding the increasing concentration in UK and EU audit markets, the lack of auditor choice and the consequent threat to auditor independence, including the impact of low-balling. However, increasing concentration can have beneficial effects, including efficiency gains from scale (including auditor technical) economies. In this context, in examining concentration in the UK audit market between 1998 and 2003, Abidin et al. (2010, p 187) comment 'Rising audit market concentration has attracted the interest of regulators, market participants and academics for many years, especially since the audit firm mega-mergers of the 1980s and 1990s which reduced the global Big 8 to the Big 5 … there was a general concern … that excessive concentration would reduce competition, leading to an increase in the price of the services provided by the auditor … there was also concern, based on observed market behaviour, regarding excessive competition and low-balling … high seller concentration can both harm consumers and also benefit them through, for example, economies of scale and scope.' A recent EU consultation on audit control structures, noted that, against a potential growing divide between big 4 and mid-tier audit firms, important issues relating to barriers to entry included 'the brand and the perception/reputation, which are used as proxies of the quality per se, the quality and expertise of staff, the low switching rates' (DG, 2008, p.8). This paper provides evidence, on what are perceived to be important issues, on the type and extent of switching among big 4 and leading mid-tier auditors, together with any associated discounts.

Based on a sample of 7651 companies and 458 voluntary auditor switches, the empirical results indicate that the pricing of initial engagements by big 4 and mid 4 auditors differ in a number of important aspects; both with reference to corporate sub-sectors, and in relation to the type of auditor switch. *Inter alia*, in contrast to recent U.S. evidence, substantial discounts are evident in the Main Market for larger quoted auditees switching between big 4 auditors. Although there is some evidence that smaller firms listed on the AIM

market switching from big 4 to mid 4 auditors benefited from smaller discounts, there is no significant evidence that discounts were offered for similar switches on the Main Market. The results also reveal an absence of price rivalry between big 4 and mid 4 auditors to secure initial audit engagements in the private corporate market. The remainder of the paper is structured as follows: the next section provides an overview of previous theory and evidence relevant to the study, and discusses the associated hypotheses examined in the research. Section 3 describes the data, variables and method, with the empirical results following in Section 4. Section 5 concludes the paper with a discussion of the key findings.

2. OVERVIEW OF LITERATURE AND STUDY CONJECTURES

(i) Overview of Extant Theory and Evidence

As discussed below, rather than modelling the determinants of auditor switching/selection, this study focuses on the impact of initial engagements on the pricing of audit fees. Following previous studies, it aims to empirically model the (average) influence of auditor switches on audit fees, irrespective of the reason(s) underpinning them. This is not to say that the motivation for auditor selection/switching is unimportant (e.g., Beattie and Fearnley, 1995; and Oxera, 2006), and so this section includes a brief outline of contemporary evidence relating to audit switching to inform the current research. Whatever the primary motivation for a switch, does not preclude discounting occurring (e.g., as part of a tendering process or voluntary auditor rotation). More specifically, the theory discussed below assumes there will be competition for the new audit, irrespective of initial switch triggers[3].

Auditing demand is generally modelled in terms of agency theory where conflicts of interest result in agency costs which can be alleviated by monitoring, including the reporting of information about the entity to external parties. But since this information is provided by management, it is assumed it will be discounted by users unless it is verified by independent auditors. Although large auditor premiums may be associated with non-competitive oligopolistic pricing behaviour, Craswell et al. (1995) report that in competitive markets it represents returns for investments in reputation for higher quality audits and industry specialisation. This is consistent with evidence in the EC report (EC, 2006, p. 49), which found that auditors and clients considered

[3] There are a number of possible motives for switching auditors, including company growth and international diversification, for corporate governance reasons (e.g., audit rotation) and to hire an industry (or IRFS) specialist. Although I am unable to test for the specific impact of these factors on discounts, the estimated mean discounts should remain unbiased; since these should only (if significant) effect the allocation of discounts. The various motives underpinning a switch are not inconsistent with competition for a new audit. For instance, a quoted firm may switch to secure the services of a higher 'quality' (big 4) auditor or may 'rotate' its current big 4 auditor on the grounds of good governance. In both cases, it would be surprising if there was no competition for the new audit.

reputation to be ‘by far’ the most important factor determining auditor choice. Auditor changes may therefore be motivated by the perceived benefits of moving to a higher quality (big 4) auditor.

Turning to the specific theory concerning initial engagement fee-cutting, DeAngelo's (1981) model demonstrates that incumbent auditors have a comparative cost advantages over auditors seeking to displace them. These arise from audit start-up and switching (sunk) costs which yield client-specific future quasi-rents. These are defined (p.116) as future fees less ‘avoidable costs, including the opportunity cost of auditing the next-best alternative client’. Discounts arise when non-incumbent auditors compete to secure these rents[4]. Low-balling occurs when, in order to secure the new audit, the initial engagement fee is set below the new auditor’s normal profit plus initial start-up costs. Rather than audit independence being diminished, low-balling is an axiomatic competitive outcome. Kanodia and Mukherji (1994) modify DeAngelo's (1981) model and demonstrate that low-balling can still occur when bargaining power vests with the client. They conclude (p.605) ‘the incumbent auditor’s value of retaining the client is lower when the bargaining power resides with the client rather than the auditor. Therefore client pressure is a less serious problem than it would be if low-balling arises from the type of forces modelled in DeAngelo’.

Dye (1991) also stresses that DeAngelo's (1981) model hinges on the assumption that bargaining power resides with the incumbent auditor. He notes that future rents will be nullified if this situation is reversed. Discounting will then occur only when audit fees are not publicly disclosed. Rents can be deduced by investors when fees are disclosed leading to their erosion; and in turn to the elimination of discounts. He concluded that when fees are not disclosed, clients have incentives to reward the auditor with higher fees (rents) to produce more positive reports for investors.

As noted in Section 1, regulatory concern has been expressed regarding the potential link between low-balling and the impairment of audit independence. This is because the new auditor is viewed as having an interest (the discounted fee, which might be perceived as a debt owed by the client) in securing future rents (which may include consideration of consultancy fees) and hence the solvency of the client (e.g., Francis, 1984; and Gregory and Collier, 1996). For example, Lennox (1998, p.12) commented ‘low-balling may give an auditor less incentive to qualify if the auditor believes that a qualification would precipitate bankruptcy and the loss of future rents’. However, as noted by Gregory and Collier (1996, p.13) economic theory suggests that

[4]Chan (1999) also developed a two-period ‘imperfectly competitive’ model which predicts low-balling where there is ‘fierce’ competition between auditors. This occurs, because incumbent auditors have comparative cost advantages arising from audit specialization and the avoidance of start-up costs. Auditors may also discount fees to increase presence in specific markets (e.g., the AIM market, see Section 4) or industrial sectors.

auditors should perceive the initial discount as being a sunk cost; and therefore irrelevant - and by implication (and as hypothesised by DeAngelo, 1981) not posing a threat to auditor independence. In discussing the anecdotal and psychological evidence which suggests agents are influenced by sunk costs (act 'irrationally'), Friedman et al. (2007, p.79) report results from laboratory experiments which led them to conclude that **'**the data reveal a surprisingly small sunk cost effect that is generally insensitive to the proposed psychological drivers'; indicating, in general, rational behaviour.

The predictions of the theoretical models are made in equilibrium; so that, for example, in steady state, DeAngelo's (1981) model predicts an absence of switching. The rate of switching for larger UK quoted firms certainly appears low. For FTSE 100 firms in 2004, it was only 1.2%, rising to 3.2% for FTSE Small Cap companies (Oxera, 2006, p. 44). As noted by Oxera (2006, p.25) 'the process of switching auditors costs both the company and the audit firm significant amounts of time (and money).' The lower switching rate of FTSE 100 companies may therefore be related to the higher switching costs incurred. However, for listed UK firms over the period 1998 to 2003, Abidin et al. (2010, p.203) report an annual average switching rate of 5.8%, which they note is higher than that reported in previous periods. They conclude (p.203) this might 'reflect increased competition brought about, in particular, by increased audit committees activity in relation to auditor selection and appointment during this period'.

Beattie and Fearnley (1995, p.235) report that the most heavily cited reason for UK listed companies considering a change of auditor in 1992 was 'level of audit fee', followed by 'dissatisfaction with audit quality'. More recently, Oxera (2006, p. 46) report that the audit committee chairs of UK listed firms rated the most important factors that might trigger switching as 'a fault with the quality of the audit opinion', followed by 'a breakdown in the working relationship between auditor and management'. So far as the choice of auditor is concerned, EU listed firms rated 'reputation of the audit firm' as being the most important, followed by 'previous experience of the audit firm' (EC 2006, p. 49). Evidence in the Oxera report (2006, p.30) reveals that 66% (44%) of FTSE 350 (Small Cap) audit committee chairs considered that membership of the big 4 was an important factor in influencing their choice. In terms of rating factors influencing auditor selection, the chairs of FTSE 350 and Small Cap audit committees both rated 'technical and accounting skill' as being the most important factor.

Little is known about the motivation underpinning auditor switching in the private corporate sector. Chaney et al. (2004) and Peel and Roberts (2003) comment that the demand for big 4 auditors may be associated with

monitoring compensation schemes, to going public and takeover decisions and to signal higher quality reporting to providers of equity and loan capital, creditors and customers. Furthermore, firms may switch from big 4 auditors to save costs (the premium) or because of the more personalised service a smaller auditor offers (Marriott et al., 2007). Relative to firms with non-big 4 auditors, the studies of Chaney et al. (2004) and Clatworthy et al. (2009) report that the likelihood of private firms appointing a big 4 auditor is positively associated with company size, gearing and export sales.

On the direct[5] empirical evidence regarding the pricing of initial audit engagements, using fee data collected via survey instruments for U.S. quoted companies, Simon and Francis (1988) report a significant discount amounting to 23.7%. Similarly, Francis and Simon (1987) find a significant discount (unreported) for 12 initial audit engagements in a sample of 208 small U.S. quoted firms[6]. Consistent with this earlier research, Ettredge and Greenberg (1990) find that the mean (median) percentage reduction in audit fees charged by new auditors of U.S. surveyed firms between 1983 and 1987 was 25% (23%). Based on U.S. survey evidence, Turpen (1990) also documents significant discounts associated with quoted firms switching to large (big 8) auditors, and to their smaller counterparts, over the period 1982 to 1984.

Employing a sample of 150 quoted Australian firms and 26 initial audit engagements, Francis (1984, p.148) concluded 'the often-alleged price-cutting behavior to gain new clients is not supported in the Australian market'. This conclusion was supported by the research of Butterworth and Houghton (1995). Based on a sample of 268 quoted Australian firms for the period 1987 to 1988, of which 37 had changed auditor, they found no significant evidence of initial engagement discounts. In a later study of Australian listed firms, Craswell and Francis (1999) report that only changes from non-big 4 to big 4 auditors are associated with discounts They conclude (p. 201) that their evidence supports Dye's (1991) conjecture 'that public disclosure of audit fees precludes initial engagement discounting'.

More recently Ghosh and Lustgarten (2006) provide evidence for U.S. quoted firms which had disclosed audit fee data. Their results generally supported DeAngelo's (1981) competitive discounting model. They reported a statistically significant 8.6% discount for aggregated initial engagements employing pooled regressions. However, in contrast to Craswell and Francis, significant discounts of 10.4% and 13.9% are associated with changes from large (big 4/5) to large auditors and non-large to non-large auditors respectively.

[5]Indirect evidence was provided by Simunic (1980), who employed an audit tenure (years audited) variable in his seminal study, but found it was statistically insignificant. Using data for audit fees collected via survey instruments, Chung and Lindsay (1988) also report a statistically significant coefficient on their audit tenure variable for a sample of 233 Canadian listed firms.
[6]Peel and Roberts (2003) reported statistically insignificant fee discounts for firms switching auditors in a sample of micro-sized UK public and private firms.

The authors hypothesise that discounts should be higher for switches between smaller auditors because they operate largely in the more competitive smaller client ('atomistic') market segment. In contrast, they argue that switches involving larger quoted companies, which tend to be audited by large auditors, are more likely to be subject to non-price competition.

Pong and Whittington (1994) were the first to examine the impact of new audit engagements on audit fees in the UK market. Based on a sample of 577 quoted companies pooled over the period 1981-8, they find first year audits are discounted. However, they report that only new audits conducted by non-big 8 auditors are associated with significant discounts. This led the authors to conclude (p.1094) that 'it is possible to argue that low-balling takes place whenever the new auditor does not charge a *premium* to cover set-up costs'. Employing cross-sectional models for 399 quoted UK firms in 1991, Gregory and Collier (1996) test for discounts in respect of 28 voluntary audit engagements; and report significant discounts for firms which had changed auditors within any of the last three years. Discounts for switches between big 6 auditors (20.2%) were found to be lower than for those from non-big 6 to big 6 auditors (33.6%).

The fee levels and factors underpinning auditor switching in the public/voluntary sector may differ from their private counterparts due to variations in regulatory regimes and market dynamics (e.g., Beattie et al., 2001; and Beattie et al., 2006). For example, Baber et al. (1987) find no significant evidence of discounting for 37 US county governments initial audit engagements. Rubin (1988) also report similar results for a sample of US municipal governments. In the UK, Clatworthy et al. (2002) report a positive (but statistically insignificant) coefficient associated with five initial audit engagements in a sample of 459 NHS trusts.

Finally, based on a sample of 241 regulated insurance firms who filed their accounts in Wisconsin between 1982 and 1986, Pearson and Trompeter (1994) provided novel evidence relating to supplier concentration and auditor switching. An important finding was that supplier concentration (proxied by the three largest auditors) was significantly, negatively related to audit fees. The authors noted (p.124) 'this finding is inconsistent with the claim that the high concentration leads to reduced price competition. It is more consistent with evidence of significant economies of scale accruing to the market leaders'. Furthermore, the authors reported (p.128) that 'there may be significant price competition among the market leaders for each other's clients'.

In summary, in selecting big 4 and mid-tier auditors, recent survey evidence for quoted markets suggests that reputation and technical ability appear to be key factors determining auditor choice; with larger firms favouring big 4 auditors. Audit quality and relationship issues emerged as the key factors triggering switches.

For quoted companies, extant research provide strong evidence that auditors do not charge a premium for the set-up costs associated with initial audit engagements in both the private and public sectors. The absence of evidence of low-balling in the public sector may result from a lack of competitive pressure (Clatworthy et al., 2002). In general, the evidence from studies which have employed publicly disclosed data for quoted firms is consistent with a competitive theoretical framework, suggesting (aggregated) switches result in discounts over and above audit set-up costs (low-balling); though the evidence concerning the impact of auditor brand changes on discounts is more variable. As described above, relatively few studies have been conducted on this issue, with evidence for European markets being scarce. The next section describes the hypotheses/conjectures relating to the current UK study for both quoted and private firms.

(ii) Discussion and Study Conjectures

Expectations regarding the impact of the switching variables employed in this study are not homogeneous. On the basis of extant theoretical models, and assuming an absence of collusive price fixing in the segment for the largest quoted companies, discounting of initial audit set-up costs is expected, together with additional fee reductions (low-balling). In addition, based on the more competitive characteristics of the private corporate market, and for those smaller auditee switches involving non-big 4 auditors (Ghosh and Lustgarten, 2006), then: (i) for all types of switches, larger discounts would be expected in the more competitive private corporate market; (ii) to the extent that mid 4 auditors operate in the more competitive smaller auditee segment of the quoted market, discounts associated with switches to mid 4 auditors in this market are expected to be larger than those exhibited by their big 4 counterparts; and (iii) switches between big 4 auditors are expected to be associated with smaller discounts than other auditor changes.

These conjectures are based on the theory (and supporting evidence) of Ghosh and Lustgarten (2006) discussed above. But they are far from clear cut. In 2008, the big 4 audited 96% of FTSE 250 firms (FRC, 2008, p. 65). Although, as noted above, the auditor switching rate for FTSE 100 companies in 2004 was only 1.2%, it represents an expected average audit tenure with these large auditees (attracting large fees) amounting to 83 years. Larger firms may change auditors infrequently[7], but the associated economic returns are comparatively high. In consequence, so may be the competition amongst the big 4 to secure these audits (Baumol, 1982) leading to concomitant discounts. Ghosh and Lustgarten (2006) also note this as an alternative

[7] The threat of tendering, or tendering which includes the incumbent auditor, may lead to a downward pressure on fees (which would be reflected in lower mean fees of continuing audits in the current study). This may also partially explain low switching rates; especially for large auditees, where client concerns with familiarisation costs may weigh more heavily.

hypothesis. They comment (p.342) 'Shorter tenure suggests fewer opportunities to earn quasi-rents on future audits, which discourages price cuts by small auditors. In contrast, longer expected tenure is likely to encourage price cutting by large auditors.'

For quoted firms outside the FTSE 350, it is of interest to note that the big 4 market share (in audit numbers) fell by 7 percentage points between 2005 and 2008. The next five largest mid-tier auditors gained most, increasing their share from 14.1% to 20.1% (FRC, 2008, p. 65). This decline may at least partly reflect the size distribution of firms entering or leaving the market, or that big 4 auditors are avoiding smaller, riskier clients. For example, in a recent study of the UK quoted market, Abidin et al. (2010, p.195) report that their results are 'consistent with the argument and evidence that the Big 5/4 auditors have shifted their client portfolio towards larger, less risky, clients.' Furthermore, the EC report concluded 'Big-4 firms essentially compete against each other on price as their broader characteristics and attributes are very similar…In contrast, the middle-tier firms view reputation as the key competition driver in the market for statutory audit services to larger, listed companies' (EC, 2006, p. xxvii). Again, this contention is contrary to Ghosh and Lustgarten's hypothesis. It suggests larger discounts might be expected for switches between big 4 auditors.

Despite Ghosh and Lustgarten's (2006) hypothesis suggesting that discounts are expected to be higher in the more competitive private corporate market, this may not apply to leading auditors; since they may only 'select' (or 'cherry pick') firms with strong growth or listing prospects. Alternatively, because of the big 4 dominance of the audits of larger quoted firms, mid 4 auditors may compete more strongly for the audits of private firms. In this study, the conventional big 4 and non-big 4 auditor switch classification is extended to include mid 4, other mid-tier and smaller auditors. This broader classification allows for potential differences in auditee characteristics and contracting environments. For example, that of a private firm with a small auditor switching to a big 4 auditor, compared to a larger private company switching between big 4 auditors.

There are some general issues relevant to initial engagements. The contracts between auditors and their clients are not subject to public scrutiny, but their terms are likely to be influenced by a number of factors. For instance, auditees may attempt to recover some of their search, tender and familiarisation costs. In addition, fee discounts may be constrained by market expectations. For example, shareholders and creditors may be concerned that an adequate audit can be conducted if fees are substantially lower than those disclosed by similar firms. Even though auditor switches are relatively rare, auditors (especially the big 4) may also be reluctant to discount too deeply for fear of triggering a 'price war', particularly when indemnity insurance

represents such a major cost (EC, 2006).

No matter how smoothly the transition of the audit is between changing auditors, as discussed above, there will inevitably be audit start-up costs, including the new audit firm familiarising itself with the company's management and personnel and its risk and control systems. DeAngelo (1981) also notes that the requirement to verify opening balances, together with balance sheet accounts which are permanent in form, adds further to initial costs. The auditor's production costs should decline in subsequent periods as efficiency improves in line with standard learning curve effects. Positive coefficients on initial engagement variables would be consistent with recovery of start-up costs, zero ones with the discounting of start-up costs, and negative ones with low-balling (Pong and Whittington, 1994).

As discussed above, increasing market concentration does not necessarily lead to 'detrimental' effects in terms of pricing collusion, low-balling and associated threats to audit independence (e.g., Beattie et al., 2003). Although the Oxera and EC reports argue that only the big 4 are currently equipped to conduct the audits of the largest firms, it has been documented in prior research (e.g., Beattie et al., 2001; and Peel and Roberts, 2003) that audit fees as a proportion of sales tends to fall monotonically as client size increases, indicating substantial auditing economies of scale. Furthermore, regarding inspections of the big 4 and five other 'significant' mid-tier auditors (including the mid 4 in this study), the UK Audit Inspection report on audit quality (AIU, 2006, p.2) noted that the big 4 'have the resources and capability to undertake audits on the largest scale. They also have the necessary resources to implement effective systems in response to changes to the regulatory framework on a timely basis.' But for their mid-tier counterparts it stated (p. 26) that 'the level of technical and other central resources available varied between the firms… resources had been stretched at some firms as a result of the significant recent changes to the regulatory framework'.

Hence, as well as larger clients benefiting from auditing economies of scale, they may also profit from big 4 efficiency gains, which emanate from technical and production economies of scale and scope. This may enable them to offer higher discounts than their mid-tier counterparts (effectively limiting competition to the big 4 only); which I test for by employing differential switch variables (Section 3) and hedonic models. If efficiency gains from industry, technical or production expertise are passed on to clients via initial discounts (rather than competition achieving the same) then recovery in fees would not be expected in subsequent periods (Simon and Francis, 1988, p. 264). It is also possible that low-balling equates to a 'cost cutting' lower quality audit, with implications for audit independence and associated stakeholder concerns with the veracity

of financial reports. As noted above, initial engagement pricing may also include consideration of consultancy services[8] (amplifying independence concerns), which are considered further in Section 4.

In terms of price recovery (in periods subsequent to any initial engagement discounting or low-balling), a finding of persistent discounting (rather than price recovery) would be more consistent with permanent efficiency gains, or the continuation of lower quality audits being conducted (Gregory and Collier, 1996), than it would with (temporary) competitive low-balling. Extant evidence on price recovery following initial engagement discounts is generally consistent with fees returning towards normal levels over periods of 1-5 years (Simon and Francis, 1988; Gregory and Collier, 1996; and Ghosh and Lustgarten, 2006); and hence with competitive pricing. As discussed further in Section 4, I test for evidence of price recovery using a matched sample of companies for later auditing periods in respect of both audit and consultancy fees

Given firms may switch to secure the services of a higher quality auditor, it is important to control in the pooled models for any premium effects relative to their smaller counterparts. In this context, as with previous studies, the research design of this study is formulated to test for evidence of low-balling (and potential audit impairment), employing DeAngelo's (1981) theoretical framework. In this framework, it of less import how the audit fees vary from their prior year values (particularly when the there is a change in auditor quality). For example, a private firm may switch from a big 4 to a smaller auditor to save on costs (the big 4 premium), and hence the new audit fee may be lower than the previous one (note 26). However, low-balling occurs only if the fee is below normal profit plus start-up costs plus for the current audit[9]. As well as employing the pooled modelling approach of prior research, individual big 4 and mid 4 model specifications are also estimated as additional robustness tests (controlling for audit quality). As explained in the next section, models are initially reported for the portfolio of all big 4 and mid 4 audits controlling for market and corporate status. As discussed previously, since Chaney et al. (2004) argue that private firms are likely to have different audit supply and demand functions, I test for any differential discounts across corporate sectors.

Finally, recent EU and UK regulatory concerns have focused more on the impact of high market concentration generally, rather than the specific issue of low-balling (EU, 2010; and BIS, 2010). This may be

[8] In terms of impairment of auditor independence, there may be turning points associated with consultancy fees. For instance, Holland and Lane (2008) report that the potential for auditor impairment, as proxied by auditee market value, appears to occur only where total fees are relatively large. In Section 4, I provide evidence on consultancy and total fees for initial (relative to continuing) engagements; together with further evidence for subsequent audits.

[9] As with prior research, in describing evidence of low-balling in this paper, it is assumed that normal profits are reflected in the fees of the non-switching firms. As noted by Simon and Francis (1988, p.261), strictly speaking, more accurate tests for low-balling would require proprietary data which includes normal profit margins. Similar arguments could be made, however, regarding many audit studies; for instance in relation to large auditor or industry specialist premiums.

because current evidence (though relatively scarce), provides support for temporary discounting and price recovery (implying low-balling poses a low threat to auditor independence) and/or because auditor switching is a comparatively rare event. However, high supplier concentration (and its implications for competition) is still a major concern, with the EU currently undertaking consultation regarding mandatory auditor rotation and re-tendering 'to introduce more dynamism and capacity into the audit market' (EU, 2010, p.16). But the UK Government is unconvinced. Based on available evidence, it noted mandatory rotation may increase 'collusion among audit firms in order to coordinate acquisition of clients', would add £55m per annum in incremental costs to UK companies, and does not appear to increase competition by reducing concentration (BIS, 2010, p.12). *Inter alia*, this paper provides new evidence relating to whether competitive pricing appears to operate in relation to voluntary switches between big 4 auditors[10] and to those involving their leading mid-tier counterparts.

3. DATA AND VARIABLES

(i) Data

The FAME DVD-ROM database was employed to collect the data employed in the study. To the author's knowledge, it is the most extensive publicly available source of UK corporate data, at least in terms of its coverage. The proprietors state that it contains information on up to 2.2 million companies in detailed format. However, a large proportion of these are dormant, or the data are historical in nature (relating to firms which previously failed/ceased trading etc). Becht et al. (2008, p.246) also note that compared to records at Companies House, some firms are omitted from FAME. Furthermore, UK small and medium sized private companies need only file abridged accounts, and small firms may opt out of having an audit.[11]

Annual accounts data and other non-financial information is available in the form of individual firm records. Data for their latest available financial statements (predominantly for the calendar year 2006), was downloaded for all available UK companies if they met the following criteria: they were audited by the big 4 or the next four largest mid-tier auditors (the 'mid 4'as defined below), were independent (not held as a subsidiary of another firm), not dormant, had total assets (minimum £1,000), sales, and audit fee data

[10]For instance, in giving evidence to the House of Lords inquiry on market concentration and the role of auditors (HL, 2010, p.20), a member of Oxera stated 'there is evidence that the greater the concentration in the sector and the less the switching the higher the audit fees are. I think it is worth distinguishing between two types of competition concern, so one is a narrower concern about: this is a concentrated market, is there price competition, quality competition, between the Big Four? It's the kind of concern that you would expect the OFT or the Competition Commission to look at.'

[11]Under the Companies Act, private firms qualified at the time of the study as small (medium) for the purposes of filing abridged accounts if at least two of the following conditions were met: annual turnover must be £5.6 (£22.8) million or less; total assets must be £2.8 (£11.4) million or less; the number of employees must be 50 (250) or fewer. To claim audit exemption, small private firms must have had total assets (turnover) of £2.8 (£5.6) million or less.

available, together with disclosed profit/loss data, and were outside the financial sector (including quoted investment trusts, banks and insurance firms). Only one year's data (the latest available) is used for each firm.

The criteria relating to financial statement data relate to small and medium company reporting exemptions (note 11). Following previous studies (e.g., Chan et al., 1993), firms were required to be independent in order to avoid the confounding influence of including both a company and its subsidiaries in the regression models. Also in line with prior research (e.g., Firth, 1997), firms in the financial sector were excluded on account of the different composition of their financial statements. The final sample comprises 7651 independent non-financial UK companies, of which 4067 (53.2%) and 3584 (46.8%) are audited by big 4 and mid 4 auditors respectively. Of these 7651 firms, 6084 are private and 1155 are public, of which 1108 are quoted. There are a total of 458 auditor switches of which 86 are in the quoted sector.

(ii) Variables

Table 1 shows the variable definitions and labels, partitioned according to whether they are control or switch variables. In the interests of parsimony, and since they have been widely employed in previous research (e.g., Simunic, 1980; Pong and Whittington, 1994; Chaney et al., 2004; McMeeking et al., 2006; and Clatworthy and Peel, 2007), I briefly discuss the control variables in the order shown in Table 1.

Insert Table 1 about here

(a) Control Variables

Following the seminal theoretical and empirical research of Simunic (1980), the control variables focus on auditee size, complexity and risk. In previous studies, client size has been found to be the principal determinant of audit fees. Because it is essential to control fully for size when assessing the impact of initial engagements, two variables (LNASSET, LNSAL) are employed to capture the maximum variation in audit fees. In this context, Pong and Whittington (1994, p.1075) note that audits have two broad dimensions, 'an audit of transactions and verification of assets. The former will be related to turnover and the latter to total assets.' Following prior research, the relationship between audit fees (AFEE) and turnover (SAL) and total assets (ASSET) are expressed in natural logarithmic (LN) form. Two standard complexity variables are utilised: SQSUBS, defined as the square root of the number of subsidiaries (Francis and Simon, 1987), and EXPORT, the ratio of non-UK turnover to total turnover (e.g., Beatty, 1993; Nikkinen and Sahlström, 2005; and Clatworthy and Peel, 2007). As noted by Chaney et al. (2004), EXPORT is expected to be associated with increased audit risk/effort in consequence of regulatory and verification issues.

Three other explanatory variables which have been found to be positively related to audit fees in prior research (e.g., Chaney et al., 2004; and Clatworthy and Peel, 2007) are: whether not the auditee disclosed a post-balance sheet event (POSTBAL), or a contingent liability (CONTINL) or reported exceptional and/or extraordinary items (EXTRA). These aim to capture the incremental audit effort/risk associated with non-routine audit items. For instance, Firth (1997, p.512), comments that 'extraordinary items are those transactions or events which are non-recurring by nature and they require audit procedures that are not part of the routine audit programme. Clatworthy and Peel (2007) advance similar arguments in relation to post balance sheet events; whereas Low et al.(1990), Owusu-Ansah (2000), Chaney et al. (2004) and Clatworthy Peel (2007) argue that these occurrences (POSTBAL, CONTINL and POSTBAL) lead to greater audit risk, reinforcing their expected positive association with audit fees.

Two standard variables (Chan et al., 1993; and Firth, 1997) are used a control for client risk, the ratio of net profit before tax to turnover (RETSAL), and the ratio of total liabilities to total assets (TLTA). Following previous research (e.g., Chaney et al., 2004) a variable indicating loss-making auditees (LOSS), is included in the model to assess its incremental impact relative to RETSAL, together with one (QUAL), signifying whether a firm received an audit qualification (Palmrose, 1986). In line with prior studies (Beatty, 1993; and Clatworthy and Peel, 2007), variables are also employed to indicate whether a company had failed (was insolvent) or was being voluntarily dissolved by its members (was solvent). These variables (FAIL and DISS) are expected to be positively related to audit fees. Failing firms are likely to be associated with incremental audit risk, and those being voluntarily liquidated entail incremental audit effort in the preparation of final accounts[12]. Two further control variables denote whether the client's year-end falls in December or March, known as the 'busy' audit period (BUSY); and whether the auditee is located in London (LOND), where fees are expected to reflect higher cost of living differentials.

The binary variables PRIV, UNQPLC, OFEX, AIM, MAIN and UNLIMIT are employed to control for corporate/market status. Following Ball and Shivakumar (2005) and Clatworthy and Peel (2007), private companies (PRIV) are hypothesised to have lower agency costs (and hence audit fees) than public unquoted ones (UNQPLC) in consequence of being more closely held. In addition, Ball and Shivakumar (2005, p. 97) note 'shareholder turnover is lower, and shareholders take a more active role in management, which reduces their reliance on financial statements for monitoring managers'. Because ownership dispersion and the

[12]FAME indicates whether a firm failed (via receivership or insolvency proceedings), or whether it was voluntarily dissolved.

demand for higher quality information increases progressively from private (PRIV), to public unquoted (UNQPLC) companies; and then to the junior stock markets of Ofex (OFEX), the Alternative Investment Market (AIM), and the Main Market (MAIN), concomitant increases in audit fees are expected (Ball and Shivakumar, 2005; and Clatworthy and Peel, 2007). Furthermore, audit risk, particularly with regard to reputational losses, is also hypothesised to increase (and hence audit fees) in a similar manner. This follows, given the higher profile of public companies generally, and the increasing size of firms and their profile on AIM relative to Ofex (now called 'PLUS-quoted'), and on the Main Market compared to AIM[13] (Palmrose, 1986; and Clatworthy and Peel, 2007).

In addition, at the time of this study, to avoid penalties, quoted companies had publish their accounts within 6 months of their year-end; whereas private and public firms had 10 and 7 months, respectively, to file their accounts at Companies House. Consequently, the audit effort (and related audit fees) associated with public relative to private (and quoted relative to public) firms may be higher to meet these filing/reporting requirements. A relatively small number (12) of firms in the sample were unlimited. Since, the incremental impact of this type of corporate status on audit fees has not been modelled previously, an additional variable (UNLIMIT) is employed to capture any systematic influence of this form of corporate ownership[14]. Because of the unlimited liability its members, a higher quality audit may be required by them regarding the firm's performance and going concern status. Hence, relative to private firms, an audit premium might be expected.

Most prior research does not control for any industry variations, but some studies have found audit fees differ systematically by industry sectors (e.g., Palmrose, 1986; and Gregory and Collier, 1996). In consequence, firms were coded into the following industry groups according to their SIC codes: whether or not a company was in the manufacturing (MANUDUM), service (SERVDUM), other industrial (OTINDUM) or retail/wholesale (RETADUM) sectors. A total of 69 private firms, none of which involved auditor changes, did not disclose SIC information. As shown in Table 1, these were assigned a value of unity in the binary variable NOIND. In the regression models SERVDUM is omitted as the base case.

As noted above, data was collected for the latest available annual accounting year-end for each company (i.e. only one year's data is included for each company). However, because year-ends are spread over a calendar year, together with the fact that reporting delays vary, and that there is an unknown time lag associated with

[13]Both AIM and Ofex were launched in 1995 for smaller, riskier firms. Relative to the Main Market, both markets are less regulated, the stocks quoted on them less liquid, and they have a lower profile. Ofex is the least regulated and liquid market, with the lowest profile. In October 2006, Ofex changed its name to the 'PLUS-quoted' market.

[14]In general, unlimited companies need not file their accounts at Companies House, though they may voluntarily do so.

the prioritising and inputting of data on FAME, leads to the sample companies having year-ends as follows: 48.6% (3720) in 2005, 51.2% (3918) in 2006 and 13 (none of which involved switches) in 2007. Following previous research (e.g., Pong and Whittington, 1994) a variable is included in the models (Y2006/7), where unity denotes firms with a year-ends in 2006/7, to control for any systematic differences. Finally, a binary variable (BIG4) is included in the pooled models to denote big 4 auditors.

(b) Switch Variables

As discussed previously, given current interest in leading auditors, this study focuses on auditor switches to big 4 auditors and the next four largest auditors. The largest four mid-tier (mid 4) auditors were ascertained with reference to the Financial Reporting Council's key facts and trends report for 2006 (FRC, 2006, p.42), which lists the total fee income and total audit fee income of 'major' UK auditing firms for year-ends in 2005. The four largest mid-tier auditors in descending order of size, with regard to both their total income and their total audit fee income, are: Grant Thornton, BDO Stoy Hayward, Baker Tilly and PKF. The next 10 largest mid-tier auditors (14 mid-tier auditors in total) were also noted (see below). The cut-off point for leading mid-tier auditors was not arbitrary, but rather was made with reference to the fact that the difference in total audit fee income of the 3rd and 4th ranked mid-tier auditors amounts to £1.3m; whereas the difference between the 4th and 5th ranked is some 14.8 times higher at £19.2m[15]. A well as being clearly differentiated in terms of their fee income, these four mid-tier auditors, together with the big 4, are the only auditors currently covered by the ICAEW *Audit Firm Governance Code*. Their selection is on the (stated) basis of their dominance of Main Market audits; and that 'the reputations that the audit firms have built upon their licence to audit are of vital public interest' (ICAEW, 2010).

Since individual big 4 and mid 4 models are estimated, differential labelling for most of the switch variables is required. Using FAME records, current and prior year auditors were identified and voluntary[16] auditor switches (458) were then coded as a binary variable (SWITCH). Switches were coded into one of the following sub-groups according to whether the previous auditor was a member of a) the big 4; b) the mid 4; c) other mid-tier auditors[17], as ranked 9th to 18th (above); and d) all other smaller auditors. Mid 4 is treated as a

[15]This compares to a difference in total audit fee income between the largest and fourth largest mid-tier (mid 4) firm of only £9.6m. Subsequent analyses revealed that these auditors maintained their dominance in the rankings over the following three years. For 2008 year-ends, the difference in audit fee income between the 3rd and 4th ranked (the same two) mid-tier auditors was £1.0m; but between the 4th and 5th ranked was still substantially larger at £19.0m.

[16]Current and previous editions of the same FRC source, together with *Accountancy* magazine (both of which tabulate mergers of accountancy firms), were examined, and internet searches were conducted, to ensure this was the case. The merger discussed in Section 1 did not impact on the switch variables.

[17]The cut-off point chosen to denote mid-tier auditors must (to a certain extent) be a subjective one. The aim was to differentiate the larger (major) auditors. The 14th largest non-big 4 auditor was selected, since the difference in total audit fee income between it and the

separate category for the same reasons as advanced in earlier sections of the paper. As shown in Table 1, the switch variables employed in the separate mid 4 and big 4 models are whether the previous auditor was a big 4 (SBIG4), mid 4 (SMID4), other mid-tier (SOTMID) or smaller auditor (SSMALL).

For comparison with the single model estimates and the pooled models of prior studies, the next four variables in Table 1 ending in B4, together with the following four ending in M4 (SBIG4B4 to SSMALLM4), merely respecify the preceding variables to indicate in the pooled regressions whether the switch was to a big 4 (B4) or to a mid 4 (M4) auditor. As discussed below, for comparison with previous studies, and because in the individual models for quoted firms the number of non-big 4 switches is relatively small, I also examine the sensitivity of the estimates by including the following composite switch variables in alternative specifications: SNBIG4, denoting, in the single model estimates, that a switch is from a non-big 4 auditor; and in the pooled regressions: SNBIG4B4 and SNBIG4M4, indicating that a switch is from a non-big 4 auditor to a big 4 and mid 4 auditor respectively**.**

Insert Tables 2 and 3 about here

(iii) Descriptive Statistics

Table 2 presents mean and median (for non-binary variable) values for the variables employed in the study for auditees in the big 4 and mid 4 sub-samples. Table 3 provides a more detailed analysis of auditor switches with reference to auditee size (total assets) and corporate/market status. As highlighted in the tables, significance tests for mean, binary and distribution differences are conducted using t, chi-square and Mann-Whitney tests respectively. It should be noted that the Mann-Whitney test can also be interpreted as a difference in medians test (Siegel and Castellan, 1988, p.129). In total, 4067 companies are audited by the big 4. Of these, 949 are public limited companies (plcs), of which 760 are quoted. For mid 4 auditors, the sample comprises 3584 firms, of which 606 are plcs, 348 of these being quoted.

Table 2 evaluates the variables according to new audit engagements, continuing ones and all clients. Comparing the portfolio all big 4 audits to those of their mid 4 counterparts reveals that most of the variable means differ significantly. As expected, big 4 auditees are substantially larger (ASSET, SAL), more complex (SQSUBS, EXPORT, POSTBAL, CONTINL, EXTRA), and incur higher audit fees (AFEE) than their mid 4 counterparts. Although mean client profitability (RETSAL) does not differ significantly between the sub-

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previous ranked auditor was £0.2m; whereas the difference in income between it and the next ranked auditor was £1.2m. In any event, in line with prior research, I also estimate models with switch variables representing all non-big 4 auditors.

samples, a significantly higher proportion of big 4 auditees are loss-making (LOSS), with the mean and median gearing (TLTA) of big 4 clients also being higher. Despite this, the big 4 issued a marginally smaller proportion (4.1%) of qualifications (QUAL) than their mid 4 counterparts (5.5%). But there are no significant differences in the proportions of firms which failed or were voluntarily dissolved. Other than for OFEX, all the corporate/market status variables differ significantly between the two sub-samples. Mid 4 auditors are associated with a higher (lower) proportion of private (83%) and AIM (8%) audits compared to their big 4 counterparts (76% and 6%).

In total, 458 voluntary auditor switches to big 4 and mid 4 auditors are examined, of which 185 (40.4%) are from big 4, 51 (11.1%) from mid 4, 28 (6.1%) from other mid-tier, and 194 (42.4%) from smaller auditors. Although a similar proportion (about 76%) of switches to big 4 and mid 4 auditors comprise private firms, AIM clients who switched represent a higher share for mid 4 auditors (12.6%), than for the big 4 (10.0%). Table 3 provides a more detailed analysis of switches with reference to auditee size, type of switch and corporate status. Columns 5 and 10 and rows 1 and 2 reveal that firms switching to big 4 auditors are significantly larger than those switching to their mid 4 counterparts, whether or not the previous auditor was a member of the big 4. Rows 6 reveals this differential persists across corporate sub-sectors. Unsurprisingly, it is most pronounced in the quoted sector. However, in contrast to similar switches to big 4 auditors in this sector, the median size (total assets) of firms switching from big 4 (£21.8m) and non-big 4 (£20.5m) auditors to the mid 4 differ to only a small extent.

It is important to note that, as Table 3 reveals, the minimum number of auditor change observations in the switch variables is five. The table also shows that, in the period analysed, there were no switches from other mid-tier to mid 4 auditors (SOTMID) in the quoted market. Although the estimated parameters and statistical tests associated with binary variables with five unitary values (and many zeros) are valid, it would have been desirable to base inferences on a larger number of observations. In consequence, as discussed above, models are also reported with switch variables collapsed into the less refined non-big 4 categories[18] (SNBIG4, SNBIG4B4 and SNBIG4M4).

4. EMPIRICAL RESULTS

Tables 4-6 report OLS models for the samples and variables previously described. Model 1 shows regression parameters for all auditees. Models 2-4 report separate model estimates for private, plcs and quoted firms

[18]This is a perennial issue. For example, the study of UK Gregory and Collier (1996), examined 28 voluntary initial year audit engagements; Simon and Francis (1988), 60; and Craswell and Francis (1999), 224.

respectively. Models 1(a) to 4(b) show the same model estimates for the big 4 and mid 4 samples. In common with prior research, Table 4 shows all models initially estimated with the inclusion of SWITCH to examine the aggregate impact of all auditor switches. As Table 4 reveals, all models appear well determined[19] with reference to adjusted R^2s. However, for all models, an examination of regression residuals revealed significant evidence of heteroskedasticity ($p < 0.01$) employing Breusch-Pagan tests. In consequence, White's robust covariance matrix (White, 1980) was employed to estimate corrected standard errors and associated t-values.

Residuals were examined with reference to Cook's distance parameters to identify observations with the potential to have a large influence on the regression coefficients (outliers). Cook's values > 1 are generally considered worthy of further examination (Chatterjee et al., 2000). Only two observations (neither of which were firms which switched auditor) exhibited values > 1[20]. The models were therefore re-estimated with these observations omitted. The results revealed only marginal changes, with none of the inferences affected[21]. The observations were therefore retained in the analysis. Potential collinearity problems are assessed with reference to multivariate variance inflation factors (VIFs), where the literature (Firth, 1997, p.520) suggests that 'only VIFs in excess of 10 are deemed evidence of significant multicollinearity.' Excepting the natural negative correlation between AIM and MAIN[22], no VIFs approached this level. Unsurprisingly, the highest VIF (6.50) is associated with corporate size[23] (LNASSET) in Model 4(a). Given this, and the fact that corporate size has been found to be the principal explanatory variable in previous studies, it is important to note that *both* auditee size variables exhibit positive and highly significant coefficients in all models. Furthermore, SWITCH exhibits very low VIFs, varying between 1.01 and 1.09.

Consistent with the VIF analysis, the control variables exhibit their expected coefficient signs and most are highly significant in all models reported in Table 4. As expected, the BIG4 coefficient is positive and highly significant in all models. The premium rises from 9.6% for private firms to 13.7% for quoted ones. Although Model 1 shows DISS (p=0.574) and FAIL (p=0.206) attract their anticipated signs, there is no significant evidence that firms being voluntarily dissolved or failing were charged premiums; with the latter finding being

[19]For example, the R^2 compares favourably with those reported by Craswell and Francis (1999), and Ghosh et al. (2006), for initial audit engagement models for quoted firms in Australia and the U.S. respectively (both reporting adjusted R^2s of 0.77).
[20]None of the models produced more than one value >1, with remaining values being relatively low. For instance, for Model 4(a), which is estimated for the smallest big 4 sub-sample, the highest Cooke's value is only 0.20.
[21]For example, the changes to the SWITCH coefficients when the observations for the largest (Model 1) and smallest (Model 4(b)) samples were dropped, were from -0.0644 to -0.0641; and from -0.1204 to -0.1284, respectively.
[22]By construction, there is a high negative correlation between AIM and MAIN, but this does not impact on multicollinearity.
[23]Low VIFs were also evident in respect of the explanatory variables; e.g., FAIL (1.02), RETSAL (1.04), LOSS (1.13), and EXPORT (1.12). As expected, there are significant (but not excessive) correlations between these variables: FAIL and LOSS (0.052, p=0.01); LOSS and RETSAL (-0.059, p=0.01); and EXPORT and SQSUBS (0.134, p=0.01).

consistent with that of Clatworthy and Peel (2007). The negative significant Y2006/7 coefficient suggests that companies with year-ends in 2005 were charged higher audit fees[24]. All the market/corporate status variables are statistically significant in Model 1. Consistent with expectations, unquoted plcs are charged a premium relative to private firms. Premiums rise monotonically from the junior Ofex market to the Main Market. Interesting, unlimited firms are charged a premium similar to those quoted on the Ofex market.

(i) Switch Results

(a) Pooled Models

As reported in Table 4, the SWITCH coefficient for Model 1 is negative (-0.064) and significant (p=0.02) implying that the 458 companies which voluntarily changed auditors benefited from a relatively small 6.2% discount[25]; which is marginally lower than that (8.6%) reported by Ghosh and Lustgarten (2006) for quoted firms only. This is equivalent to a monetary discount of £1,058 expressed in terms of the mean of the log of audit fees; amounting to 0.02% of the sample mean of the log of sales. In this context, it should be noted that, reflecting economies of scale, Peel and Roberts (2003, p.230) show that audit fees as a percentage of sales fall from 0.69% for the smallest UK firms (sales < £1m) to 0.05% for the largest (sales > £100m).

Models 2-4 in Table 4 show results for the private, plc and quoted markets. Although the coefficient of SWITCH is negative for private firms, Model 2 reveals it is not significantly different from zero (p=0.54). However, for models 3 and 4, there is significant evidence of discounting. The SWITCH coefficients indicate discounts of 18.2% and 18.5% for plc and quoted firms respectively. These imply mean (logged) audit fee discounts of £13,095 and £21,762 (both amounting to about 0.05% of logged sales). Certainly, the latter estimate is economically significant in percentage terms; being more than twice that (8.6%) of the most recent estimate for the US quoted sector, employing a similar cross-sectional model (Ghosh and Lustgarten, 2006). In aggregate, and excepting the private market where the absence of a significant premium suggests that audit set-up costs are discounted, these results suggest significant evidence of low-balling.

Insert Table 4 and 5 about here

(b) Big 4 and Mid 4 Models

The preceding models follow prior research in that they assume that it is appropriate to pool big 4 and non-big 4 auditees. This approach does not allow the coefficients of the explanatory variables in the regression models

[24] Premiums are calculated via the transformation e^x-1.

[25] Table 4 shows that it is private firms in the big 4 sample which are driving the significant negative impact of the Y2006/7 variable. An examination of the characteristics of firms in Model 2(a) via a logit model indicated that more loss-making, failed and highly geared firms were associated with audits in the earlier (2005) year. It is therefore likely that the significant negative coefficient of Y2006/7 is reflecting their more 'healthy' characteristics.

to differ between the two sub-samples. As discussed in earlier sections of the paper, because the big 4 may conduct audits differently from their smaller counterparts, it may be appropriate to estimate separate models. Recent research focusing on private firms also suggests that the coefficients of explanatory variables differ as between big 4 auditors and their smaller counterparts (Chaney et al., 2004; and Clatworthy et al., 2009). Models 1(a) to 4(b) in Table 4 report separate estimates for big 4 and mid 4 auditees which mirror the pooled estimates and reveal a similar pattern of significant control variables. Chow model tests were conducted for each of the four models to test if the coefficients of the big 4 and mid 4 models were significantly different for (i) all explanatory variables, (ii) explanatory variables less SWITCH, and (iii) explanatory variables less industry variables. In all cases, and for all four models, F-tests indicated that the big 4 and mid 4 models differed significantly at $p \leq 0.01$. This suggests that non-pooled models may be appropriate. However, Chow tests are not definitive; rather they are indicative that separate (hedonic) models may be more suitable. The individual models therefore provide supplementary evidence to the conventional pooled specifications and also circumvent potential selection bias.

For the big 4 models, significant discounts are evident for all the models, with the big 4 discount for private companies (9.8%) being about half that for their larger quoted counterparts (18.1%). In contrast, for the mid 4 models, discounts are associated only with plcs. Although these firms in general (and quoted ones in particular) which switched to mid 4 auditors benefited from discounts of 12.2% and 11.3% respectively, they are statistically insignificant at conventional levels (p=0.07 and 0.13 respectively). The SWITCH coefficient for private firms is positive and statistically significant at the 10% level, indicating a premium of 6.7% is charged to private firms switching to mid 4 auditors. *Ceteris paribus*, this offers some evidence for the recovery of set-up costs. Based on the average impact of aggregated switches to big 4 and mid 4 auditors, these results do not support those of Ghosh and Lustgarten (2006) for the US market. Rather, larger discounts are associated with the larger quoted firms switching to big 4 auditors. There is also evidence contrary to the hypothesis that discounts might be expected to be higher in the private corporate market.

Insert Table 5 about here

(ii) Results for Switch Variables

The previous results are based on the average impact of all types of switches. Tables 5 and 6 report a more detailed analysis where identical models to those in Table 4 are estimated and labelled, other than that the

composite SWITCH variable is replaced by the more refined auditor change variables discussed in Section 3 and shown in Table 1. In the interests of parsimony, other than for BIG4, where the estimates change marginally, control variable parameters omitted, since these are similar to those reported in Table 4. As discussed above, because of the small number of auditor changes represented in some of the variables, as well as highlighting the significance of coefficients at conventional significance levels, 10% levels are also indicated. Tables 5 and 6 report results for the pooled and individual models respectively.

Panel 1 in Table 5 show pooled results for firms switching from big 4 and non-big 4 auditors. For all models, the most notable feature is the negative and, other than for Model 2, the highly significant discounts evident for switches between big 4 auditors (SBIG4B4). The results indicate a significant discount of 26.7% for quoted companies, falling to an insignificant one (p=0.15) of 11.7% for private firms. Although the sign on SNBIG4B4 is negative in all models, it is only bordering on significance in Model 1 (p=0.06). Hence, in the pooled regressions, there is no significant evidence at conventional levels that switches from non-big 4 to big 4 auditors are associated with discounts in either the private or quoted markets. In particular, the negative coefficient on SNBIG4B4 in the quoted market model is highly insignificant (p=0.79).

For switches from big 4 to mid 4 auditors, SBIG4M4 exhibits negative coefficients in all models. However, it is only significant at the 5% level in the quoted market. The coefficient indicates that quoted firms switching from big 4 to mid 4 auditors benefit from a discount of 19.3%[26]. Finally, the table shows that the most notable feature in relation to switches from non-big 4 to mid 4 auditors is the positive and significant coefficient of SNBIG4M4 in Model 2.This suggest that an initial engagement premium of 10.5% is incurred by private firms switching from non-big 4 to mid 4 auditors; a finding which is analysed in more detail below. The coefficients of SNBIG4M4 are negative, but insignificant at the 5% level in the remaining three models.

The second panel in Table 5 reports results for the more refined non-big 4 switch variables (Table 1). For switches to big 4 auditors, these show that the preceding inferences are not altered when auditor changes are partitioned into switches from mid 4 (SMID4B4), other mid-tier (SOTMIDB4) and smaller auditors (SSMALLB4). For switches to mid 4 auditors, however, it is switches from smaller auditors which have a significant impact. In particular, estimates for Model 2 suggest that private firms changing from smaller to mid 4 auditors (SSMALLM4) incur a significant premium (14.2%). This contrasts with similar switches to

[26]These firms would also benefit from non-payment of any premium associated with their previous big 4 auditor. The BIG4 coefficient (0.124) in Model 4 indicates this is 13.2%.

plcs which benefit from a significant discount (31.3%). However, the discount declines both in size (27.2%) and significance (p=0.07), when the estimates are limited to quoted firms.

Panels 1 and 2 in Table 6 mirror the preceding results, but are based on separate model estimates for big 4 and mid 4 auditees. Estimates for the big 4 models are consistent with their pooled counterparts; though the coefficients for switches from big 4 (non-big) auditors tend to be marginally larger (smaller) than those reported for the pooled models. For all big 4 clients, a significant discount of 17.1% is associated with switches between big 4 auditors, rising to 28.0% for quoted companies. However, for mid 4 auditees, the results are less consistent with their pooled counterparts. Although, other than for SMID4 in Model 4(b), all auditor switch coefficients retain their signs relative to the pooled models, the significant coefficients in the pooled models decline in significance when estimates are restricted to mid 4 auditees. More specifically, the SBIG4 parameters for models 3(b) and 4(b) indicate discounts (p=values) of 11.0% (0.18) and 13.3% (0.14) for plc and quoted companies respectively.

For private firms switching from smaller to mid 4 auditors, the results are very similar to their pooled counterparts. However, for quoted companies, the SSMALL coefficient declines both quantitatively (-0.192) and in significance (p=0.20). In addition, consistent with the pooled models, the coefficient estimates for private firms switching between big 4 and mid 4 auditors are highly insignificant, suggesting an absence of price rivalry between leading auditors in this market.

Insert Tables 6 and 7 about here

(iii) Aim and Main Markets

The dynamics of the AIM and Main Market may differ. AIM companies are generally smaller, and more risky that their counterparts on the senior market (Clatworthy and Peel, 2007). As noted above, mid 4 auditors also have a larger share of AIM audits than their big 4 counterparts. Table 7 therefore reports models which show the relative impact of auditor switches in each market. It shows pooled, big 4 and mid 4 model estimates similar to models 4, 4(a) and 4(b), except that they are limited to firms quoted on the MAIN and AIM markets (n=1089). The mean (median) size in terms of total assets (£m) of the firms listed on these markets which switched to big 4 auditors (n=46), at £332.04 (£54.14) are considerably larger[27] than for those (n=39) switching to their mid 4 counterparts, at £48.52 (£19.86). As expected, firms switching to big 4 auditors on the Main Market (n=24) are substantially larger, at £594.63 (£112.96), than those switching to mid 4 auditors

[27]The mean differences in total assets and LNASSET are significant at p=0.11.and p=0.01 respectively. The medians (Mann-Whitney test) for total assets also differ significantly between the two samples (p=0.01).

(n=9), at £73.60 (£59.47). AIM firms switching to big 4 auditors (n=22) are also larger, at £45.57 (£23.84), than their counterparts switching to mid 4 auditors (n=30), at £41.00 (£15.55).

Table 7 reports the same switch variables as shown in the first panel of Table 5. Switches are labelled with AIM and MAIN to denote auditor switches in these markets. As the table reveals, switches from non-big 4 to mid 4 auditors (SNBIG4M4) are not differentiated, since only two of these switches were on the Main Market. Consistent with preceding results, for the larger firms switching between big 4 auditors on the Main Market, with mean total assets (TA) of £891.8m, large (and highly significant) discounts are evident. However, there is no significant evidence of discounting for smaller MAIN firms (mean TA = £99.41m) switching from non-big 4 to big 4 auditors; or for similar clients switching to big 4 auditors on AIM (mean TA = £27.99m). Furthermore, although the coefficient of SBIG4B4AIM attracts a negative coefficient, it is not significant. Unlike their larger MAIN counterparts, AIM companies (mean TA = £99.41m) switching between big 4 auditors do not appear to benefit from a significant discount.

For the pooled mid 4 model, the switch coefficients all exhibit negative signs, but only SBIG4M4AIM is significant at conventional levels. However, there is some evidence (p=0.08) that firms switching from big 4 to mid 4 auditors (SNBIG4MID4) obtain discounts. There is also significant evidence that AIM firms switching from big 4 to mid 4 auditors benefit from a 21.3% discount. As with previous results, the significance levels of the coefficients decline when estimates are limited to mid 4 auditees. The discount for AIM firms switching from big 4 to mid auditors declines to 18.4%, as does its significance (p=0.09). Furthermore, SBIG4MAIN now exhibits a positive, though highly insignificant, coefficient.

(iv) Additional Analysis

(a) Robustness Tests

Francis (1984) adopts a novel methodology where the coefficients from a model estimated from a sample of companies which excludes firms which had switched auditors, are used to predict the audit fees of those which had switched auditors. For the sample of switching firms, the difference between the actual and predicted audit fees (residuals) for initial engagements are then calculated. Evidence of significant (mean) negative residuals would then be consistent with discounting; since the model excluding switching firms would tend to predict larger audit fees (in the switching sample) than were actually charged. I employ this alternative methodology as a robustness test of the conventional modelling approach.

Models 1-4 in Table 4 were re-estimated *excluding* switching firms. The coefficients from each model were

then used to predict the audit fees of firms in the associated switching samples. Residuals were then calculated. The results show a very high degree of congruence with the original findings. The mean residual for each switching sample differ from the SWITCH coefficients reported in Table 4 to only the third or fourth decimal place. They are: -0.06434 (Model 1); -0.0199 (Model 2); -0.2009 (Model 3); and -0.2045 (Model 4). Based on t-tests, and mirroring the results it Table 4, the estimated mean residuals for models 1, 3 and 4 all differed significantly from zero at $p \leq 0.01$ (two-tailed tests). This level of conformity employing two different methodologies suggests a high degree of model robustness of the estimated discounts[28].

(b) Consultancy and Total Fees

Quoted firms are required to disclose the non-audit (consultancy) fees paid to their auditors; and some previous studies have included them as an additional explanatory variable (on the grounds of knowledge spill-overs), and found a positive association with audit fees. This is unexpected, since the cost of jointly purchasing two products from a supplier is usually less than purchasing the products separately (Seetharaman et al., 2002). In any event, caution should be applied in employing this variable in audit pricing studies, particularly initial engagement ones. Firstly, despite (since 2004) the Auditing Practices Board's ethical standards stating (section 14) that the audit partners of listed firms must disclose to audit committees 'any contingent fee arrangements for non-audit services provided by the auditor'; expected future consultancy fees may play a part in the decision of the incoming auditor to tender for the new audit contract [29] (at a given price). However, the consultancy fees paid to auditors on initial engagements are unlikely to be in steady state.

This may induce errors into the model and may explain why Ghosh and Lustgarten (2006, p.362) report that the discounts decline when they employ consultancy fees as an incremental explanatory variable. A second problem is that audit and consultancy fees are thought to be jointly determined, leading to potential simultaneous causality estimation bias. This requires an instrumental variables two-stage regression research design (Whisenant et al., 2003; and Larcker and Rusticus, 2010). For credible implementation, at least one additional instrument (exclusion) variable is required which is a significant determinant of consultancy fees, but not audit fees. Finding a valid instrument is usually extremely difficult in practice. As noted by Neumayer

[28]All estimates and parameters were double checked and all models estimated twice. Clearly, this degree of congruence does not result from a statistical tautology. For example, all the predicted audit fees (and hence their residuals) for the switching samples (unsurprisingly and naturally) differ from those when they are included in the full models as reported in Table 4.

[29]However, In December 2010 the APB ethical standards (Standard 4) were amended to include: 'The audit engagement partner shall ensure that audit fees are not influenced or determined by the provision of non-audit services to the audited entity'. It is arguable that future studies may therefore find a weaker (or perhaps even no) association between audit and consultancy fees.

(2003, p. 655), 'such an exclusionary variable is frequently impossible to find.' Despite employing a number of reasonable candidates (such as the issue of debt and equity) this proved to be the case in the current study.

I therefore follow Ghosh and Lustgarten (2006) and include the consultancy fees paid to the auditors as an additional variable in Model 4. Since previous studies have employed the actual and log values of consultancy fees, both are used in alternative specifications. Consistent with previous UK evidence (e.g., Ezzamel et al., 1996), both variables were highly positive and significant ($p < 0.01$) when included (separately) in Model 4. Also consistent with Ghosh and Lustgarten (2006), the coefficients of SWITCH declined to -0.184 and -0.166 with the inclusion of the actual and logged values of consultancy fees respectively. Both coefficients remained highly significant ($p < 0.01$); indicating a marginal reduction in the discount from 18.5% (for the original model) to 16.8% ad 15.3% respectively.

An alternative approach is to jointly estimate the sum of audit and consultancy (total) fees (Butterworth and Houghton, 1995; and Seetharaman et al., 2002). In particular, although Butterworth and Houghton (1995) reported an insignificant negative relationship between initial engagements and audit fees for their sample of Australian listed firms, there was some evidence ($p=0.108$) of a positive relationship between initial engagements and (log of) total fees in a similar regression. The authors noted (p.337) that a reason for this might be that 'auditors were able (and motivated) to sell the new clients a greater level of non-audit services than the incumbents, so that the non-audit services were a *result* of the switch'. Following Butterworth and Houghton (1995), I estimate an identical model to Model 4 in Table 4, other than the dependent variable is the log of the sum of total fees. The model appeared well determined (Adjusted $R^2 = 0.813$), with the key control variables retaining their signs and significance levels.

Of particular interest is that the (negative) SWITCH coefficient increases in magnitude from -0.205 (Model 4) to -0.346 and is highly significant ($p < 0.01$). This represents a combined reduction in audit and consultancy fees of 29.3% compared to an audit fee discount of 18.5%. The fact that consultancy fees are also significantly lower[30] on initial engagements may result from concerns over audit independence and the joint provision of audit and consultancy services. Such pressures were not as prevalent at the time of Butterworth and Houghton's study. But in today's environment, firms may be more reluctant to offer large new consultancy contracts which coincide with initial audit engagements. It may also take time for contacts with the previous

[30]A regression model with the log of consultancy fees as the dependent in Model 4 confirmed this; with the SWITCH coefficient again exhibiting a negative and highly significant coefficient ($p=0.01$).

auditor to expire before the client negotiates for additional services, so that consultancy contracts with the new auditor are not in steady state. Further evidence is provided on this issue (below), regarding price recovery.

(c) Voluntary Audits

Since 1993 when UK private firms could first claim audit exemption, the size criteria have been gradually relaxed[31]. In consequence, the market for private company audits may have become more competitive. It is possible, therefore, that discounts are offered by auditors to induce voluntary audits. To test for this, a variable was computed to indicate those private firms (coded 1) which had opted for voluntary audits (sales ≤ £5.6m and total assets ≤ £2.8m, see note 11), and those with mandatory audits above these limits. This new variable was then included as an additional explanatory variable in the pooled and individual big 4 and mid 4 models for private firms (Table 4).

The results suggested no evidence of discounting to obtain voluntary audits. In fact the variable exhibited positive, but statistically insignificant, coefficients ($p > 0.05$) in the three models. Importantly, the inferences relating to SWITCH variable are unaltered. In the mid 4 model, the SWITCH coefficient was unchanged at -0.065. In the pooled and big 4 models the coefficients changed to the third decimal place only; from -0.020 to -0.021 in the pooled model, and from -0.103 to -0.104 in the big 4 model. Consistent with this, when an interaction variable denoting switches to firms which had opted for voluntary audits was included in the three models, the coefficients were statistically insignificant in all cases. There is therefore no evidence that small firms which opt for a voluntary audit receive an incremental discount when they switch auditors. However, in the mid 4 model, the coefficient was positive (0.131) and bordering on significance at the 10% level ($p=0.11$). This is consistent with the earlier finding that private firms switching from smaller to mid 4 auditors are charged a premium.

(d) Evidence of Price Recovery?

Employing the same cross-sectional regression methodology as the current one, previous studies (Simon and Francis, 1988; and Gregory and Collier, 1996) tested for evidence of price recovery (Section 2) by including variables to represent firms which had switched auditors in previous periods. That is, they were not the same firms which had been the subject of the tests for initial audit engagement discounts. Whilst it is not unreasonable to treat companies who had switched auditors in earlier periods as proxies to test for evidence of

[31]The size criteria for private firms have been recently been further extended under the Companies Act. For accounting periods after April 2008, the sales (total assets) limits for small firms were raised to £6.5m (£3.26m). Specific private firms, including certain subsidiaries and financial enterprises, are excluded from the exemption. However, finance firms and subsidiaries are excluded from this study.

price recovery, it is possible that initial audit discounts were not received (as assumed) by these firms. I apply a more powerful research methodology (albeit at the expense of sample reduction), by matching a more recent sample of firms to the original one.

Using the same sampling criteria as that described in Section 3, new data was downloaded for all firms audited by the eight leading auditors previously specified for the their latest available financial year ends (2007-2009) available on FAME. Companies from the new sample were then matched to the earlier sample on the basis of their company registration numbers or name. A total of 5,615 companies (73.4%) matched across the two samples, with private firms contributing most to missing cases[32]. Of these, 1,007 had missing data for sales, profit or audit fees (the vast majority again being private), leaving 4,587 matched firms, 866 of these being quoted. Other than for the variables representing year-ends, identical variables to those described above were calculated for the new sample. Binary variables (as in the original model) are also included in the new model to represent the year-end of the data[33] (2008, 2009), to control for general factors such as inflation and the recession (though such factors should also be at least partially captured by the explanatory variables). A further variable is included to represent firms which had switched auditors after the original data was analysed (12.4% of cases), to control for any confounding effects[34].

This leaves a total 239 initial audit engagements from the original sample (none of which subsequently switched auditors) which form the basis of the matched tests for price recovery. Of these 71 are plcs and 61 are quoted firms. As shown in Table 8, by comparing the current year-ends of those firms in the new matched data which switched (n=239) with those in the original data, I am able to code binary variables to represent whether the subsequent audit is the first (SWITCH1), second (SWITCH2), third (SWITCH3) or fourth (SWITCH4) year following the initial audit engagement. In alternative specifications, I also include a combined binary variable (SWITCH14) which captures the aggregate impact of all subsequent audits by switching firms (the sum of SWITCH1 to SWITCH4). Given the sample attrition via matching, it is important to compare original matched sample estimates (including identical companies which switched) with the new

[32]I attempted to discover some of the causes for non-matching cases by cross referencing them to the FAME database. In total, 1,112 companies (88% of them private) appeared to have switched to a non-big '8'auditor or to have no auditor. This movement away from leading auditors may (at least partly) result from recessionary pressures, with smaller firms seeking cost savings. Furthermore, the size criteria for small and medium sized private firms have been relaxed further (see note 29). Given the recession, more firms may therefore have taken advantage of the audit exemption. Other causes of sample attrition may include company mergers and corporate dissolutions, amalgamations and failures, which may not appear on the updated (or for the years selected) FAME discs.
[33]Of the sample, 2.1%, 50.2% and 47.7% had year-ends in 2007, 2008 and 2009 respectively.
[34]Although I am unable to ascertain exactly when the switch occurred to refine this variable, I was able to establish whether a switch occurred by comparing the current auditor of the company, to the current auditor listed in the original data. The coefficient of this variable therefore captures the average effect of all previous switches.

matched sample estimates (n=4,587) which test for price recovery. As reported in Table 8, to provide a direct comparison, models 1, 3 and 4 (where discounts were originally estimated for the full sample) were re-estimated employing the reduced matched (original) sample (n=4,587). As also reported in Table 8, separate models were then estimated for the new matched sample to test for evidence of price recovery.

Table 8 provides summary statistics for the models and the estimated parameters for the switch variables. Noteworthy is the fact that the original models remain well determined and robust in the reduced matched samples. The SWITCH coefficients retain their significance levels, though the coefficient estimates are marginally higher (lower) for the sample of all auditees (Model 1) and the plc and quoted specifications (models 4 and 7). Similarly, the directly comparable models for the more recent matched samples are also well determined with reference to their adjusted R^2s, with the key explanatory also exhibiting their expected signs and significance levels. Interestingly, after controlling for other factors, there is evidence that firms with 2009 year-ends were charged significantly less than those reporting for the previous year, which may be in consequence of recessionary pressures[35].

Turning first to the aggregated results (SWITCH14), there is evidence of price recover for all models; and strong evidence in respect of the plc and quoted models. For the full sample estimates (Model 2), the coefficient is negative (-0.058) and insignificant (0.218), but is only marginally smaller than its counterpart (SWITCH) for initial audit engagements in Model 1 (-0.072). The evidence is much more convincing for the plc (Model 5) and quoted (Model 8) specifications. Although the SWITCH14 coefficients are both negative, they are close to zero and highly insignificant, offering strong support for price recovery[36]. In relation to the dispersion of switch observations for Model 3, there are 3, 39, 188 and 9 observations represented in SWITCH1 to SWITCH4 respectively; so caution is warranted in interpreting the parameters of SWITCH1. For models 6 (9) there are 1(1), 12 (11), 55 (46) and 3(3) observations in the same variable categories. Estimates are therefore only reported for SWITCH2 and SWITCH3, but the other variables are included in the models to avoid the confounding influence of adding them to the constant term[37].

For all auditees (Model 3), there is no obvious recovery pattern, other than all the coefficients are insignificant; and perhaps of more import, that of SWITCH4 is positive and highly insignificant. The pattern for the plc and quoted models is, however, more consistent. Although statistically insignificant, Models 6 and

[35]The coefficient in Model 2 (for all auditees) of -0.085 is highly significant (at p=0.01), suggesting fees were 8.1% lower in 2009.
[36]The variable denoting an auditor switch in the new sample was insignificant in all cases. In models 2, 5 and 8 the coefficients (p-values) were respectively: 0.012 (0.70), 0.017 (0.77) and -0.055 (0.39). These results are therefore not inconsistent with price recovery
[37]When added together (SWITCH1+SWITCH4) and included in models 6 and 9 (as reported) the coefficients (p-values) were respectively: 0.296 (0.33) and 0.161 (0.63).

9 both exhibit negative coefficients for audits two years after initial engagements, but positive ones for third year audits. Furthermore, although based on a smaller number of matched firms (605) and switches (33), similar results are evident when the estimates are restricted to quoted firms audited by big 4 firms. The SWITCH coefficient for initial engagements is -0.235 (p=0.01), whereas that for SWITCH14 is 0.034 (p=0.74); with a similar pattern being evident for the individual switch variables[38]. These results suggest that low-balling is a (temporary) competitive outcome, rather than one resulting from efficiency gains or 'cost cutting'.

Finally, as discussed above, to provide further evidence regarding audit and consultancy (total) fees, I re-estimate Model 4 in Table 6 for the matched quoted firms in the original sample with the log of total fees as the dependent variable. I then estimate a similar model for all quoted companies in the new matched sample (with the variables as previously described, including SWITCH14). Consistent with the results for the full sample, the SWITCH coefficient in the reduced matched (original) sample is negative (-0.311) and highly significant (p=0.01). In the new matched sample, however, the coefficient of SWITCH14 is positive (0.037) and highly insignificant (p=0.68). Furthermore, in the new matched sample, a regression with consultancy fees as the dependant variable produced a similar result, with the pattern of recovery for both total fees and consultancy fees[39] being identical to that reported for audit fees in Table 8 for Model 9. As discussed above, these results offer strong evidence that consultancy fees are lower on initial engagements but subsequently recover to normal levels, possibly in consequence of concerns over audit independence. This suggest auditors and/or their clients are cautious in entering into large consultancy contracts at the same time as auditing ones; and/or consultancy contacts with the previous auditor have not expired.

5. CONCLUSIONS

Against a background of increasing supplier concentration and big 4 dominance of the audits of the largest firms, this paper provided new evidence on the pricing of initial audit engagements by leading UK auditors. Unsurprisingly, larger firms were associated with switches to big 4 auditors. Even in the private corporate sector, firms switching to mid 4 auditors were smaller than those switching to their big 4 counterparts. As expected, the big 4 dominated in terms of switches involving the largest quoted firms. There is no evidence that leading mid-tier auditors were capturing such audits from the big 4 via switches.

[38]The coefficients (p-values) of SWITCH2 AND SWITCH3 were -0.211 (0.34) and 0.116 (0.88) respectively.

[39]The coefficient of SWITCH14 was positive (0.120) and highly insignificant (p=0.79) when the log of consultancy fees was specified as the dependent variable. In an alternative specification, the coefficients (p-values) of SWITCH2 and SWITCH3 were -0.688 (0.57) and 0.185 (0.71) respectively. For the model with log of total fees as the dependent variable, they were -0.224 (0.32) and 0.069 (0.48).

Consistent with DeAngelo's (1981) theoretical model, a 6.2% discount was evident for switches across all corporate markets, rising to 18.5% for quoted firms. In contrast to the mid 4 model estimates, switches to big 4 auditors attracted significant discounts in all corporate sectors. A key finding is that a discount of 28% is associated with larger firms switching between big 4 auditors in the quoted sector where economic rents are substantial. The results for switches to mid 4 auditors are more mixed. The pooled model indicates that firms switching from big 4 to mid 4 auditors in the quoted market attract a discount of 19.3%; but the discount is insignificant when estimates are restricted to mid 4 clients. For the smallest private firms switching from smaller to mid 4 auditors, a significant premium of 14.2% is charged. This is the only occasion when auditors appear to recover the set-up costs of the new audit[40]. This may be because these clients have relatively poor information and control systems. In consequence, comparatively high initial set-up costs may be incurred, which the new auditors are not prepared to absorb.

Consistent with the previous results, a more refined analysis revealed that only larger firms switching between big 4 auditors on the Main Market benefit from significant (and substantial) discounts. Interestingly, the pooled results indicate the reverse for AIM companies. Only firms which switch from big 4 to mid 4 auditors on AIM obtain significant discounts. This may emanate from competition amongst leading mid-tier auditors to gain market share from the big 4 to increase their profile in a market where they already conduct more audits than their larger counterparts. Assuming large auditees are aware of the comparatively large discounts available from switching between big 4 auditors, a conundrum relates to their relatively low switching rate (Section 2). Despite it being good governance practice to rotate auditors, one potential explanation may be that (as discussed in Section 2) familiarisation costs are relatively high. It is also possible that large quoted firms are aware that discounts are likely to be transient[41].

The results relating to discounts and price recovery for quoted firms switching between big 4 auditors are important ones. In contrast to US evidence (Ghosh and Lustgarten, 2006), they are consistent with DeAngelo's (1981) competitive theoretical framework; and survey evidence in the EC report that ‘Big-4 firms firms essentially compete against each other on price…middle-tier firms view reputation as the key competition driver’(EC, 2006, p. xxvii). The big 4 appear to compete via substantial discounts for the comparatively high

[40]In all other cases, the evidence was consistent with auditors not recovering initial set-up costs; with most switch coefficients exhibiting negative signs. Of the 110 switch coefficients reported in tables 4 to 7, 84 are negative. This is significantly higher than would be expected randomly (chi-square = 34.1; $p < 0.01$).

[41]Another reason may be sheer inertia. This may encourage even higher (tender) pricing discounts in attempt to displace incumbent auditors. As discussed in Section 2, the EU is currently engaging in consultation regarding mandatory auditor rotation and re-tendering; with the UK Government noting the high potential incremental monetary cost to auditees.

returns associated with auditing larger quoted clients. This is reinforced on the demand side, where firms seeking to appoint a big 4 auditor face a relatively homogeneous product, where price appears to be the main discriminatory (demand) factor. In this context, the Oxera report (2006, p. 33) concluded 'in practice, the similarities of the Big Four at different levels sometimes make it hard for companies to differentiate between them in a tender; a view that was shared by audit committee chairs and audit firms'

There is therefore no evidence of non-price oligopolistic 'competition' between the big 4 for the audits of the UK quoted companies. Rather the evidence supports the reverse interpretation. Coupled with the new evidence that indicated that the total (and consultancy) fees earned by auditors on initial engagements were substantially lower than for their counterparts with continuing engagements, together with the fact that these (and audit fees) tended to recover to normal levels in subsequent audit periods, the results are consistent with low-balling being a competitive outcome, rather than one leading to the impairment of auditor independence.

These specific findings also differ (in certain respects) from those reported for the UK quoted market in the 1980s and early 1990s (Pong and Whittington, 1994; and Gregory and Collier, 1996). The current market for the audits of larger quoted firms is much more concentrated in terms of both leading (big 4) auditors (Oxera, 2006) and the increasing size of leading companies (Chelley-Steeley, 2008). Hence the current findings, as compared to Pong and Whittington's, that auditor switches to big 8 auditors were *not* associated with significant discounts, together with Gregory and Collier's, that switches between non-big 6 and big 6 auditors were associated with *larger* discounts than those between big 6 auditors, may result from these changes in market dynamics.

This study also extended extant research by providing new evidence for the private corporate sector. In enabled a particular powerful test of the hypothesis that heavier discounting might be expected in what might be viewed, *ex ante* a more competitive market segment. Although there is some evidence of significant discounting for aggregated switches by private firms to big 4 auditors, there is no general support for this hypothesis with regard to switches to big 4 or mid 4 auditors, or by type of auditor change. Nor is there any evidence that big 4 and mid 4 auditors competed against each other (in terms of type of switch) via discounts. It is possible that the small (absence of) discounts associated with big 4 (mid 4) auditors relates to them being the highest brand auditors. They may be being approached directly by firms with little (or no) competition for the audit; and without tendering (such clients being much less likely to have audit committees). Private firms are also likely to have weaker internal accounting and control systems than plcs, so that audit start-up costs are

comparatively high, potentially masking the extent of discounts. It is also possible that the absence of incremental discounts for smaller firms having voluntary audits relates to there being less opportunity to raise fees in subsequent audit periods; client being able to opt out of the audit or switch to a smaller auditor.

New evidence also indicated big 4 and mid 4 auditors did not appear to discount audit fees to encourage smaller private firms to opt for voluntary audits in a shrinking market for mandatory audits. This may be for similar reasons as advanced above. For example, private firms voluntary appointing leading auditors (e.g., for signalling to debt or equity providers) may do so in a non-competitive environment. It is also possible leading auditors are selective or 'cherry pick' in this sector. However, it may also be the case that smaller auditors compete via discounts for voluntary audits. This is an interesting issue which warrants further research; including the factors that determine the decision to voluntarily appoint auditors. As with other markets, the dynamics of the audit market may change temporally. Given audit switches are (currently) infrequent events, and research on initial audit engagements is scarce, continuing research would appear warranted. The impact of the recent ethical standard (note 29), which requires that audit engagement partners' ensure that audit fees are not influenced or determined by the provision of consultancy services, appears particularly germane.

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Table 1

Variable Definitions

Label	Definitions
AFEE (£)	Audit fee
LNAFEE	Natural log of AFEE(£)
ASSET (£)	Total assets
LNASSET	Natural log of ASSET(£)
SAL (£)	Turnover (sales)
LNSAL (£)	Natural log of SAL(£)
SQSUBS	Square root of the number of subsidiaries
EXPORT	Sales outside UK divided by total sales
POSTBAL	1 if company disclosed post-balance sheet event , 0 otherwise
CONTINL	1 if company disclosed contingent liabilities, 0 otherwise
EXTRA	1 if company disclosed exceptional and/or extraordinary items, 0 otherwise
QUAL	1 if company had qualified audit report, 0 otherwise
RETSAL	Ratio of profit before tax to sales
LOSS	1 if company is loss-making, zero otherwise
TLTA	Ratio of total liabilities to total assets
FAIL	1 if company failed (creditors winding-up/receivers appointed), 0 otherwise
DISS	1 if company was being voluntarily dissolved, 0 otherwise
LOND	1 if company is located in London, 0 otherwise
BUSY	1 if company's year-end is in December or March, 0 otherwise
PRIV	1 if company is private limited, 0 otherwise
UNQPLC	1 if company is an unquoted public limited company, 0 otherwise
OFEX	1 if company is quoted on Ofex, 0 otherwise
AIM	1 if company is quoted on AIM, 0 otherwise
MAIN	1 if company is quoted on the Main Market, 0 otherwise
UNLIMIT	1 if company is unlimited, 0 otherwise
MANUDUM	1 if company is in manufacturing sector, 0 otherwise
SERVDUM	1 if company is in service sector, 0 otherwise
OTINDUM	1 if company is in other industrial sector, 0 otherwise
RETADUM	1 if company is in retail or wholesale sector, 0 otherwise
NOIND	1 if company has no industrial sector given, 0 otherwise
Y2006/7	1 if company's year-end is in 2006 or 2007
BIG4	1 if big 4 auditor, zero otherwise
Mid 4	1 if one of next four largest auditors after the big 4, zero otherwise
SWITCH	1 if new audit following a voluntary auditor switch, 0 otherwise
Switch Variables: Individual Models	
SNBIG4	1 if switch from a non-big 4 auditor, 0 otherwise
SBIG4	1 if switch from a big 4 auditor, 0 otherwise
SMID4	1 if switch from a mid 4 auditor, 0 otherwise
SOTMID	1 if switch from a mid-tier auditor other than mid 4, 0 otherwise
SSMALL	1 if switch from a small (non-mid-tier) auditor, 0 otherwise
Switch Variables: Pooled Models	
SBIG4B4	1 if switch from a big 4 auditor to a big 4 auditor, 0 otherwise
SMID4B4	1 if switch from a mid 4 auditor to a big 4 auditor, 0 otherwise
SOTMIDB4	1 if switch from a mid-tier auditor other than mid 4 to a big 4 auditor, 0 otherwise
SSMALLB4	1 if switch from a small (non-mid-tier) auditor to a big 4 auditor, 0 otherwise
SBIG4M4	1 if switch from a big 4 auditor to a mid 4 auditor, 0 otherwise
SMID4M4	1 if switch from a mid 4 auditor to a mid 4 auditor, 0 otherwise
SOTMIDM4	1 if switch from a mid-tier auditor other than mid 4 to a mid 4 auditor, 0 otherwise
SSMALLM4	1 if switch from a small (non-mid-tier) auditor to a mid 4 auditor, 0 otherwise
SNBIG4B4	1 if switch from a non-big 4 auditor to a big 4 auditor, 0 otherwise
SNBIG4M4	1 if switch from a non-big 4 auditor to a mid 4 auditor, 0 otherwise

Table 2

Descriptive Statistics

	Big 4 Auditees: Mean (Median)			Mid 4 Auditees: Mean (Median)		
Variables	Continuing (n= 3847)	SWITCH (n= 220)	All Audits (n= 4067)	Continuing (n= 3346)	SWITCH (n=238)	All Audits (n= 3584)
AFEE (£000)	150.4934	59.037$^{\varphi\varphi}$	145.547**	21.570	24.944$^{\varphi\varphi}$	21.793**
	(22.000)	(21.000)$^{\varphi\varphi}$	(22.000)**	(12.000)‡	(13.000)$^{\varphi\varphi\ \ddagger}$	(12.000)**
LNAFEE (£)	10.099†	9.832$^{\varphi\ \dagger}$	10.085**	9.346‡	9.530$^{\varphi\ \ddagger}$	9.358**
	(9.999)	(9.952)$^{\varphi\varphi}$	(9.999)**	(9.393)‡	(9.473)$^{\varphi\varphi\ \ddagger}$	(9.393)**
ASSET (£m)	385.047	92.163$^{\varphi}$	369.203**	17.066	17.391$^{\varphi}$	17.088**
	(13.880)†	(10.355)$^{\varphi\varphi\ \dagger}$	(13.655)**	(5.045)	(5.603)$^{\varphi\varphi}$	(5.063)**
LNASSET (£)	16.408†	16.005$^{\varphi\varphi\ \dagger}$	16.386**	15.232	15.331$^{\varphi\varphi}$	15.241**
	(16.446)†	(16.151)$^{\varphi\varphi\ \dagger}$	(16.430)**	(15.434)	(15.539)$^{\varphi\varphi}$	(15.439)**
SAL (£m)	318.593	67.545$^{\varphi\varphi}$	305.013**	21.239	20.270$^{\varphi\varphi}$	21.174**
	(13.610)	(10.202)$^{\varphi\varphi}$	(13.490)**	(6.345)	(7.416)$^{\varphi\varphi}$	(6.411)**
LNSAL (£)	16.140	15.885$^{\varphi}$	16.126**	15.211	15.361$^{\varphi}$	15.221**
	(16.426)	(16.138)$^{\varphi\varphi}$	(16.418)**	(15.663)	(15.819)$^{\varphi\varphi}$	(15.674)**
SQSUBS	2.146†	1.690$^{\varphi\ \dagger}$	2.121**	1.161	1.326$^{\varphi}$	1.172**
	(1.414)†	(1.000)†	(1.414)	(1.000)	(1.000)	(1.000)**
EXPORT	0.1119	0.1449$^{\varphi\varphi}$	0.1136**	0.0704	0.0795$^{\varphi\varphi}$	0.0710**
	(0.0000)	(0.0000)	(0.0000)**	(0.0000)	(0.0000)	(0.0000)**
POSTBAL	0.1942	0.2273	0.1960**	0.1336‡‡	0.2227‡‡	0.1395**
CONTINL	0.2989	0.3046	0.2992**	0.2376	0.2269	0.2369**
EXTRA	0.2100	0.2227	0.2107**	0.1647	0.1849	0.1660**
QUAL	0.0406	0.0500	0.0411**	0.0529	0.0798	0.0547**
RETSAL	-3.531	-0.4185	-3.371	-4.300	-0.8300	-4.070
	(0.0300)	(0.0322)	(0.0301)	(0.0244)‡‡	(0.0134)‡‡	(0.0238)
LOSS	0.3161	0.3273	0.3167*	0.2857‡‡	0.3782‡‡	0.2919*
TLTA	0.9603	0.9775	0.9612	0.9113	0.9881	0.9164
	(0.7047)	(0.6605)$^{\varphi}$	(0.7024)**	(0.6814)‡‡	(0.7523)$^{\varphi\ \ddagger\ddagger}$	(0.6841)**
FAIL	0.0088	0.0000	0.0084	0.0114	0.0126	0.0114
DISS	0.0046	0.0046	0.0047	0.0045	0.0000	0.0042
LOND	0.2700	0.3100	0.2700*	0.2900	0.3200	0.2900*
BUSY	0.5999	0.5818	0.5990**	0.5478	0.5924	0.5508**
PRIV	0.7642	0.7636	0.7642**	0.8350‡‡	0.7647‡‡	0.8304**
UNQPLC	0.0478	0.0227$^{\varphi}$	0.0465**	0.0726	0.0630$^{\varphi}$	0.0720**
OFEX	0.0023	0.0000	0.0022	0.0027	0.0042	0.0028
AIM	0.0575††	0.1000††	0.0598**	0.0771‡‡	0.1261‡‡	0.0804**
MAIN	0.1258	0.1091$^{\varphi\varphi}$	0.1249**	0.0123‡‡	0.0378$^{\varphi\varphi\ \ddagger\ddagger}$	0.0140**
UNLIMIT	0.0023	0.0046	0.0025*	0.0003‡‡	0.0042‡‡	0.0006*
MANUDUM	0.2425	0.1864	0.2395*	0.2200	0.1849	0.2176*
SERVDUM	0.5810††	0.6818††	0.5864	0.5738‡	0.6513‡	0.5790
OTINDUM	0.0322	0.0410	0.0327	0.0215	0.0340	0.0223
RETADUM	0.1331†	0.0864†	0.1306**	0.1772	0.1303	0.1741**
NOIND	0.0112	0.0045	0.0108	0.0075	0.0000	0.0070
Y2006/7	0.5194	0.5091	0.5188	0.5081	0.5084	0.5081
SWITCH	-	1.0000	0.0543*	-	1.0000	0.0664*
SBIG4	-	0.4318	0.0234	-	0.3782	0.0251
SMID4	-	0.1273	0.0069	-	0.0966	0.0064
SOTMID	-	0.0864$^{\varphi}$	0.0047	-	0.0378$^{\varphi}$	0.0025
SSMALL	-	0.3546$^{\varphi\varphi}$	0.0194**	-	0.4874$^{\varphi\varphi}$	0.0324**

Notes:

Variables are as defined in Table 1

**,* Indicates that means (t-test), frequencies (Chi-square test) and distributions (Mann-Whitney test), signified next to brackets, are significantly different between the big 4 and mid 4 samples at the 1% and 5% levels respectively (two-tailed tests).

φφ,φ Indicates that means (t-test), frequencies (Chi-square test) and distributions (Mann-Whitney test), signified next to brackets, are significantly different between the big 4 and mid 4 samples at the 1% and 5% levels respectively (two-tailed tests).

††,† Indicates that means (t-test), frequencies (Chi-square test) and distributions (Mann-Whitney test), signified next to brackets, are significantly different between the big 4 continuing and new (switching) audits at the 1% and 5% levels respectively (two-tailed tests).

‡‡,‡ Indicates that means (t-test), frequencies (Chi-square test) and distributions (Mann-Whitney test), signified next to brackets, are significantly different between the mid 4 continuing and new (switching) audits at the 1% and 5% levels respectively (two-tailed tests).

Table 3

Descriptive Statistics: Switch Type by Corporate Status

Switch From	Big 4 Auditors: Mean (Median) Total Assets (£m)					Mid 4 Auditors: Mean (Median) Total Assets (£m)				
	PRIV	UNLIMIT	UNQPLC	Quoted	**Total**	PRIV	UNLIMIT	UNQPLC	Quoted	**Total**
Big 4	49.344 (9.300) n=66	1.842 (1.842) n=1	9.270 (9.270) n=1	522.188 (72.154) n=27	**182.809**** **(26.789)***** **n= 95**	17.207 (8.997) n=56	0.000 (0.000) n=0	14.196 (10.219) n=8	36.622 (21.839) n=26	**22.548**** **(11.202)***** **n=90**
Non-Big 4	14.543 (4.884) n=102	0.000 (0.000) n=0	62.754 (64.831) n=4	61.820 (33.207) n=19	**23.272*** **(7.104)***** **n= 125**	8.028 (3.236) n=126	0.000 (0.000) n=1	15.215 (8.886) n=7	69.755 (20.527) n=14	**14.255*** **(3.773)***** **n=148**
Mid 4	21.136 (5.630) n=20	0.000 (0.000) n=0	36.093 (36.093) n=1	59.175 (52.157) n=7	**31.180*** **(7.162)** **n=28**	11.527 (4.320) n=16	0.000 (0.000) n=0	8.179 (8.179) n=2	12.082 (8.058) n=5	**11.356*** **(4.497)** **n=23**
Other mid-tier	16.792 (7.510) n=10	0.000 (0.000) n=0	48.505 (48.505) n=2	87.977 (52.464) n=7	**46.356** **(21.100)**** **n=19**	7.606 (3.746) n=9	0.000 (0.000) n=0	0.000 (0.000) n=0	0.000 (0.000) n=0	**7.606** **(3.746)**** **n=9**
Smaller auditors	12.399 (3.736) n=72	0.000 (0.000) n=0	117.913 (117.913) n=1	28.905 (23.029) n=5	**14.810** **(5.230)** **n=78**	7.511 (2.952) n=101	15.184 (15.184) n=1	18.029 (8.886) n=5	101.796 (37.827) n=9	**15.346** **(3.599)** **n=116**
TOTAL	28.215 (6.956) n=168	1.842 (1.842) n=1	52.057 (36.093) n=5	332.036 (54.143) n=46	**92.163**** **(10.355)***** **n=220**	10.852 (4.008) n=182	15.184 (15.184) n=1	14.671 (8.980) n=15	48.219 (21.839) n=40	**17.391**** **(5.603)***** **n=238**

Notes:

Variables are as defined in Table 1.

***,**,* Indicates that means (t-tests) and distributions (Mann-Whitney tests), signified next to brackets, are significantly different between the big 4 and the mid 4 samples at the 1%, 5% and 10% levels respectively (two-tailed tests).

Table 4

Model Regression Coefficients

	Pooled Models				Big 4 Models				Mid 4 Models			
	All auditees 1	Private 2	Plc 3	Quoted 4	All auditees 1(a)	Private 2(a)	Plc 3(a)	Quoted 4(a)	All auditees 1(b)	Private 2(b)	Plc 3(b)	Quoted 4(b)
CONST.	2.710**	2.908**	2.454**	2.119**	2.615**	2.942**	1.916**	1.613**	3.064**	2.997**	3.941**	4.032**
LNASSET	0.150**	0.127**	0.231**	0.283**	0.157**	0.128**	0.239**	0.290**	0.136**	0.119**	0.179**	0.219**
LNSAL	0.255**	0.262**	0.205**	0.177**	0.262**	0.265**	0.237**	0.200**	0.245**	0.265**	0.162**	0.131**
SQSUBS	0.120**	0.170**	0.069**	0.052**	0.104**	0.170**	0.052**	0.039**	0.156**	0.169**	0.124**	0.101**
EXPORT	0.542**	0.526**	0.492**	0.489**	0.567**	0.565**	0.518**	0.507**	0.482**	0.454**	0.398**	0.412**
POSTBAL	0.160**	0.186**	0.096**	0.053	0.179**	0.205**	0.114**	0.081	0.127**	0.140**	0.079	-0.020
CONTIN	0.093**	0.083**	0.071*	0.030	0.130**	0.116**	0.082*	0.024	0.043*	0.048*	0.020	0.013
EXTRA	0.086**	0.075**	0.109**	0.050	0.094**	0.078**	0.090*	0.029	0.077**	0.072**	0.120*	0.056
QUAL	0.112**	0.104**	0.184	0.236*	0.126**	0.138**	-0.011	0.248	0.089*	0.047	0.223*	0.121
RETSAL	-0.001**	-0.000*	-0.001**	-0.001**	-0.001**	-0.003**	-0.001**	-0.001**	-0.000*	-0.000**	-0.001**	-0.001**
LOSS	0.199**	0.179**	0.238**	0.241**	0.190**	0.157**	0.260**	0.264**	0.203**	0.190**	0.174**	0.152*
TLTA	0.013**	0.011**	0.055**	0.238**	0.012*	0.009	0.056**	0.345**	0.013**	0.011**	0.049**	0.144**
FAIL	0.095	0.070	0.281	0.077	-0.026	-0.046	0.194	0.071	0.202*	0.179	0.283	0.061
DISS	0.063	0.075	-	-	-0.003	0.004	-	-	0.099	0.136	-	-
LOND	0.284**	0.314**	0.210**	0.176**	0.295**	0.338**	0.227**	0.187**	0.274**	0.289**	0.196**	0.169**
BUSY	0.027	0.012	0.079**	0.159**	0.047*	0.027	0.131**	0.206**	-0.005	-0.008	-0.000	0.047
UNQPLC	0.197**	-	-	-	0.208**	-	-	-	0.182**	-	-	-
OFEX	0.380**	-	0.152	-	0.319	-	0.099	-	0.406**	-	0.222*	-
AIM	0.720**	-	0.549**	0.410**	0.728**	-	0.555**	0.474*	0.711**	-	0.589**	0.416**
MAIN	0.732**	-	0.675**	0.510**	0.763**	-	0.642**	0.555**	0.517**	-	0.603**	0.446**
UNLIMIT	0.379*	-	-	-	0.412*	-	-	-	0.208	-	-	-
MANDUM	0.048**	0.041*	0.075*	0.078*	0.060*	0.045	0.095*	0.098*	0.036	0.030	0.026	-0.016
OTINDUM	0.044	-0.002	0.064	0.023	0.050	0.005	0.065	0.034	0.030	-0.003	0.033	-0.022
RETADM	-0.075**	-0.055**	-0.123**	-0.123*	-0.091**	-0.063	-0.146**	-0.200**	-0.040	-0.051	-0.044	0.038
NOIND	0.046	0.048	-	-	-0.019	-0.012	-	-	0.179	0.175	-	-
Y2006/7	-0.045**	-0.034*	-0.028	-0.007	-0.086**	-0.079**	-0.065	-0.022	-0.007	0.007	-0.033	-0.067
BIG4	**0.102****	**0.092****	**0.126****	**0.128****	-	-	-	-	-	-	-	-
SWITCH	**-0.064*** (t=2.25) (p=0.02)	**-0.020** (t=0.62) (p=0.54)	**-0.201**** (t=3.54) (p=0.00)	**-0.205**** (t=3.36) (p=0.00)	**-0.146**** (t=3.20) (p=0.00)	**-0.103*** (t=1.98) (p=0.05)	**-0.236**** (t=2.66) (p=0.01)	**-0.200*** (t=2.18) (p=0.03)	**0.017** (t=0.49) (p=0.63)	**0.065** (t=1.67) (p=0.10)	**-0.130** (t=1.82) (p=0.07)	**-0.120** (t=1.51) (p=0.13)
Adjusted R^2	**0.835**	**0.758**	**0.864**	**0.846**	**0.850**	**0.765**	**0.852**	**0.829**	**0.764**	**0.738**	**0.725**	**0.658**
N=	7651	6084	1555	1108	4067	3108	949	760	3584	2976	606	348

Notes:

Dependent variable is LNAFEE. All variables are as defined in Table 1.

Figures in parentheses for SWITCH show coefficient t-values and associated probabilities.

**,* Indicates statistical significant at $p \leq 0.01$ and $p \leq 0.05$ respectively (two-tailed tests), based on robust standard errors.

Table 5

Pooled Models and Auditor Change Variables

Variables	All auditees 1	Private 2	Plc 3	Quoted 4
SBIG4B4	-0.180***	-0.124	-0.335***	-0.311***
	(2.52)	(1.44)	(3.14)	(2.90)
SNBIG4B4	-0.111*	-0.090	-0.096	-0.039
	(1.90)	(1.40)	(0.72)	(0.27)
SBIG4M4	-0.079	-0.037	-0.153*	-0.214**
	(1.46)	(0.54)	(1.75)	(2.38)
SNBIG4M4	0.058	0.100**	-0.211*	-0.206
	(1.37)	(2.17)	(1.77)	(1.52)
BIG4	0.111***	0.101***	0.128***	0.124***
	(7.37)	(6.15)	(3.47)	(2.73)
SBIG4B4	-0.180***	-0.124	-0.336***	-0.311***
	(2.52)	(1.44)	(3.13)	(2.89)
SMID4B4	-0.006	0.072	-0.207	-0.061
	(0.06)	(0.61)	(0.98)	(0.26)
SOTMIDB4	-0.135	-0.178	0.028	0.094
	(0.87)	(0.90)	(0.13)	(0.42)
SSMALLB4	-0.142*	-0.123	-0.127	-0.187
	(1.88)	(1.56)	(0.48)	(0.64)
SBIG4M4	-0.079	-0.037	-0.154*	-0.214**
	(1.46)	(0.54)	(1.75)	(2.39)
SMID4M4	-0.025	-0.070	0.119	-0.002
	(0.33)	(0.80)	(0.77)	(0.01)
SOTMIDM4	0.022	0.032	-	-
	(0.08)	(0.11)		
SSMALLM4	0.077*	0.133***	-0.376***	-0.317*
	(1.67)	(2.79)	(2.64)	(1.80)
BIG4	0.111***	0.101***	0.126***	0.122***
	(7.38)	(6.15)	(3.41)	(2.69)

Notes:

† Full models are shown in Table 4 and variables are as defined in Table 1; t-values are shown in parenthesis.

***, **,* Indicates statistical significant at $p \leq 0.01$, $p \leq 0.05$ and $p \leq 0.10$ respectively (two-tailed tests), based on robust standard errors.

Table 6

Individual Models and Auditor Change Variables

	Big 4 Models†				Mid 4 Models†			
Variables	All auditees 1(a)	Private 2(a)	Plc 3(a)	Quoted 4(a)	All auditees 1(b)	Private 2(b)	Plc 3(b)	Quoted 4(b)
SBIG4	-0.195***	-0.129	-0.357***	-0.329***	-0.058	-0.023	-0.115	-0.141
	(2.77)	(1.52)	(3.36)	(3.11)	(1.05)	(0.34)	(1.31)	(1.46)
SNBIG4	-0.109*	-0.086	-0.088	-0.011	0.061	0.104**	-0.154	-0.081
	(1.86)	(1.33)	(0.64)	(0.07)	(1.46)	(2.26)	(1.38)	(0.63)
SBIG4	-0.195***	-0.129	-0.358***	-0.329***	-0.058	-0.023	-0.117	-0.143
	(2.77)	(1.52)	(3.35)	(3.10)	(1.05)	(0.34)	(1.33)	(1.47)
SMID4	-0.008	0.075	-0.188	-0.033	-0.021	-0.064	0.146	0.129
	(0.08)	(0.64)	(0.86)	(0.14)	(0.28)	(0.78))	(0.83)	(0.61)
SOTMID	-0.121	-0.157	0.035	0.112	0.028	0.034	-	-
	(0.76)	(0.79)	(0.16)	(0.52)	(0.10)	(0.11)		
SSMALL	-0.143*	-0.120	-0.140	-0.149	0.080*	0.137***	-0.305**	-0.192
	(1.88)	(1.53)	(0.52)	(0.50)	(1.77)	(2.85)	(2.45)	(1.29)

Notes:

† Full models are shown in Table 4 and variables are as defined in Table 1; t-values are shown in parenthesis.

***, **,* Indicates statistical significant at $p \leq 0.01$, $p \leq 0.05$ and $p \leq 0.10$ respectively (two-tailed tests), based on robust standard errors.

Table 7

AIM and Main Market Auditor Switch Variables

	Coefficients for AIM and Main Market Models		
Variables†	Pooled Model	Big 4 Model	Mid 4 Model
SBIG4B4MAIN OR SBIG4MAIN	-0.453***	-0.477***	0.036
	(3.52)	(3.82)	(0.25)
SBIG4B4AIM OR SBIG4AIM	-0.132	-0.131	-0.203*
	(0.79)	(0.79)	(1.68)
SNBIG4B4MAIN OR SNBIG4MAIN	0.030	0.052	
	(0.12)	(0.20)	
SNBIG4B4AIM OR SNBIG4AIM	-0.085	-0.040	
	(0.54)	(0.26)	
SBIG4M4MAIN	-0.137		
	(1.09)		
SBIG4M4AIM	-0.240**		
	(2.14)		
SNBIG4M4	-0.246*		-0.106
	(1.73)		(0.80)
BIG4	0.117***		
	(2.50)		
Adjusted R^2	0.844	0.828	0.646
N=	1089	751	338

Notes:

† Control variables (unreported) for the pooled, big 4 and mid 4 models are the same as for those reported for models 4, 4(a) and 4(b) in Table 4 respectively; other than that OFEX is omitted. Switch variables are as defined in Table 1, other than MAIN and AIM are labelled to denote switches for firms quoted on the MAIN and AIM markets respectively.

***, **,* Indicates statistical significance at $p \leq 0.01$, $p \leq 0.05$ and $p \leq 0.10$ respectively (two-tailed tests), based on robust standard errors; t-values are shown in parenthesis.

Table 8

Evidence Relating to Price Recovery for Matched Samples

Model Specification			Switch Variables Included in Models					
Model Number	Adjusted R^2	N=	SWITCH	SWITCH14	SWITCH1	SWITCH2	SWITCH3	SWITCH4
1. All auditees 1	0.848	4587	-0.072* (2.01)					
2. All auditees 1	0.808	4587		-0.058 (1.23)				
3. All auditees 1	0.808	4587			-0.297 (1.13)	-0.025 (0.23)	-0.070 (1.33)	0.133 (0.45)
4. Plc 3	0.870	1142	-0.200** (3.22)					
5. Plc 3	0.851	1142		-0.017 (0.23)				
6. Plc 3	0.851	1142				-0.294 (1.43)	0.020 (0.27)	
7. Quoted 4	0.850	866	-0.193** (3.01)					
8. Quoted 4	0.845	866		-0.001 (0.02)				
9. Quoted 4	0.844	866				-0.158 (1.09)	0.022 (0.28)	

Notes:

SWITCH = initial audit engagements as defined in Table 4 for the original sample. Estimates for SWITCH are based on matched firms from the original sample. SWITCH1 to SWITCH4 = audits in the first to fourth years, following the initial audit engagement, respectively, in the new matched sample. SWITCH14 = the sum of SWITCH1 to SWITCH4.

**,* Indicates statistical significance at $p \leq 0.01$ and $p \leq 0.05$ respectively (two-tailed tests), based on robust standard errors; t-values are shown in parenthesis.