

**Discount Pricing by Auditors:  
An Inducement to Purchase Higher Quality Experience Goods**

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**Abstract**

This paper examines the practice of 'low-balling' in the U.K. audit services market during the period from 1996 to 2005. After controlling for changes in the size, complexity and risk of auditees, it is shown (based on a logarithm audit fee model) that there was a reduction of 7.5% in audit fees when there was a change between large audit firms and 7.6% when there was an 'upgrade' to a large auditor. Our findings do not support DeAngelo (1981) who predicts that we should observe competitive discounting in all cases of auditor change. Also, our findings do not support Dye (1991) who predicts that, as a result of the concern of public perception and confidence, a company will not allow the practice of low-balling if such a practice can be observed publicly. However, our results are consistent with Craswell and Francis (1999) who suggest that the discounting is used as an inducement to purchase when uncertainty about product quality is resolved through experiencing the good. Overall, the U.K. audit services market remains competitive despite an increase in market concentration.

Keywords: Audit fee, low-balling, audit services market

## **1. Introduction**

The purpose of this paper is to investigate the practice of cutting fees on initial engagements, known as ‘low-balling’ in the audit services market during the period from 1996 to 2005. The empirical results from this research project contribute to the debate on the theories of low-balling as proposed by DeAngelo (1981), Dye (1991) and Craswell and Francis (1999). This paper also contributes to the earlier empirical literature in four main ways. First, this type of longitudinal study is only feasible in the UK. Unlike other countries, for example, the US, UK firms have been required to disclose audit fees data since the enactment of the Companies Act 1967. In the US, it is only following the failure of Enron that companies are required to provide audit fees information in their financial statements. Earlier US studies have thus been based on survey data and the time period of the datasets is between three and five years.

Second, compared to earlier UK studies including Gregory and Collier (1996) and Pong and Whittington (1994), this study is much more comprehensive. While Craswell and Francis (1999), and Ghosh and Lustgarten (2006) have examined low-balling according to auditor change categories in Australia and the US respectively, there have not been equivalent studies in the UK. Gregory and Collier (1996) did analyse the degree of low-balling when the newly appointed auditor is a large firm, but due to data sample size, the paper did not examine cases where the newly appointed auditor is a small firm. Moreover, we shall examine the duration of low-balling according to the auditor change category.

Third, we attempt to look at the impact of auditor change on non-audit services fee income of auditors. So far, research studies of low-balling have largely ignored non-audit services fee income to auditors. This is partly because the data are not publicly available in many countries. However, non-auditor services fee income is an important part of an auditor's income and should be considered in the low-balling context. For example, in the 1980s there was significant pressure put on the large audit firms in the U.K. by large listed companies to restrict the cost of audit. Low-balling was considered an acceptable means of quoting for an audit in a competitive tender situation, assuming that the audit team would then be able to cross-sell other services at more lucrative rates. Fourth, the practice of low-balling is examined both before and after the Enron case.

## **2. Prior Research**

During the period from 1996 to 2005, there has been a substantial increase in market concentration. The most noticeable events in the audit services market during this ten year period are the merger between Price Waterhouse ('PW') and Coopers & Lybrand ('CL') and the fall of Arthur Andersen ('AA'). Many people were concerned that the PricewaterhouseCoopers ('PwC') merger and the demise of Arthur Andersen would reduce the competitiveness of the audit services market. However, Pong and Burnett (2006) found that PwC actually experienced a reduction in its share of overall audit services market in the U.K. compared to that held by its constituent firms, pre-merger. Duxbury, Moizer and Wan-Mohamed (2007) showed that the effect of the merger between Price Waterhouse and Coopers & Lybrand has been to increase the relative attractiveness of non-Big 5 audit firms. Their results suggest that the creation of the Big 4 as a result of the collapse of Enron is more likely to strengthen rather than

weaken the position of the remaining smaller firms. Indeed, both Pong and Burnett (2006) and McMeeking, Peasnell and Pope (2007) studied the effect of large audit firm mergers on audit pricing and they did not find evidence to suggest that the market has become less competitive.

A feature of the competitiveness of the audit services market is the practice of low-balling. Some argue that this competitive feature is harmful to the independence of auditors. There is no recent low-balling study in the UK but there is suggestion that the practice is on-going. For example, Jeremy Newman, partner of BDO Stoy Hayward claims the following:

A few weeks ago we pitched for a due diligence assignment for the U.K. subsidiary of a Continental European company. It was a potentially complex transaction and we quoted a range for our fees; after some discussion we agreed a maximum fee of £200,000. The company's auditor – a Big 4 firm – was also asked to quote and the top end of their fee range was well over £600,000. “Game” to us you would think – but no; the parent company told the U.K. subsidiary to discuss the position further with the Big 4 firm who agreed to reduce their fee by about half – to something over £300,000. Surely now it was success for us – not only because our fee was significantly lower but also because the company would question the pricing strategy of the Big 4 firm? But again no; the Big 4 firm were told that provided they reduced their fee to £220,000 (i.e. 10% more than our fee quote) the job was theirs. The Big 4 firm duly obliged. (*Can competition be “unfair”?*, by Jeremy Newman, BDO weblog, 25/05/2007)

DeAngelo (1981) and Chan (1999) argue that low-balling arises because of start-up costs for auditors and switching costs for clients. These factors give the incumbent auditor an advantage over competitors, allowing the incumbent to set higher fees for subsequent audits. DeAngelo characterizes the difference between anticipated future fees and costs of subsequent audits as prospective ‘quasi rents’. A given period's client-specific quasi-rent equals the excess of revenues over avoidable costs, including

the opportunity cost of auditing the next-best alternative client. Competition among auditors for the stream of future quasi rents available to the incumbent creates incentives for auditors to charge fees below the cost of the initial engagement. Auditors who expect to charge fees above costs on future audits are willing to lower their fee below costs on initial audits. Thus, in DeAngelo's model, fee discounting itself is not the real source of impaired auditor independence; rather, the source is the anticipated quasi rents. Chan's model does not address auditor independence directly; however, he argues that initial-year price cuts are a natural consequence of competition among audit firms. Price cutting occurs only where auditors are intense competitors. Chan's model indicates that banning initial year price cutting would have the same effect as a collusive agreement to raise fees.

Dye argues that a critical feature of DeAngelo's argument is the assumption that the incumbent auditor has more bargaining power than the client. It is the incumbent's market power that allows auditors to raise fees above costs for subsequent audits. However, Dye offers an alternative assumption — the client has more bargaining power and can use it to keep the fee at the level of the incumbent auditor's costs. While DeAngelo assumes that the auditor captures the entire surplus on subsequent audits, Dye suggests that the client could capture it by getting the auditor to lower the fee to the level of the audit cost, thereby accepting zero quasi rent. Thus, cost savings represent a 'pie' that could be shared between the auditor and client or entirely captured by either party. The outcome depends on the bargaining power between the auditor, who has some monopoly power, and the client, who has some monopsony power. Monopsony power arises because there is only one buyer for the specialized knowledge, which the auditor has accumulated from the initial audit. Monopoly

power arises because there is only one seller, who has already acquired that knowledge.

If auditors anticipate this alternative outcome, they would not cut their price on initial audits. Dye argues that this alternative outcome will be anticipated when clients have stronger incentives to use their bargaining power to prevent incumbent auditors from earning quasi rents. A stronger incentive exists when quasi rents earned by auditors impair investors' confidence in the client's financial statement. When investors recognize that quasi rents give the auditor a stake in the continued existence of the client, they perceive the client's financial statements to be less reliable. This conclusion follows only if quasi rents are publicly disclosed. If quasi rents are hidden from investors, a client in a strong bargaining position might still allow the auditor to earn positive quasi rents in the hope of gaining a more favorable audit report. Thus, Dye's model suggests that the practice of fee discounting persists because quasi rents are not publicly disclosed.

(Insert Table 1)

Therefore, DeAngelo predicts that we should observe discounting in all cases of auditor change, while Dye predicts that we should not observe discounting in auditor change cases where audit fees are publicly disclosed. Table 1 summarizes the results of research studies of low-balling and the results provide a mixed support of the two theories. Using Australian data (which are publicly disclosed), Craswell and Francis find that there is initial engagement discounting only for upgrades from non-Big

auditors to Big auditors. They conclude that their findings generally are consistent with Dye that public disclosure of audit fees precludes initial engagement discounting. In the U.K., where information of audit fees paid to auditors is also publicly disclosed, both Gregory and Collier and Pong and Whittington identify a tendency for new auditors to charge less, on average, than continuing incumbent auditors. Pong and Whittington identify a persistent tendency for newly-appointed auditors to charge less, on average, than incumbent auditors. This is particularly pronounced in the case of newly-appointed auditors who are not large auditors. Gregory and Collier investigate the price changes between large audit firms and changes from large firms to small firms. In the US, where companies were only recently required to disclose audit fee paid to auditors, Ghosh and Lustgarten analyse auditor changes taking place between 2000 and 2003. Their analysis indicates that clients who switch auditors within the 'atomistic' (smaller clients) sector receive on average a discount of 24 percent over the prior auditor's fee. However, clients who switch auditors within the 'oligopolistic' (larger clients) sector receive on average a discount of only 4 percent. They argue that the results are observed because price competition is known to be less intense in oligopolistic markets than in atomistic markets. The results of these studies therefore do not support Dye's prediction that low-balling will not be observed where audit fees are publicly disclosed.

Craswell and Francis offer an explanation for discounting for upgrades to large auditors. They suggest that the discounting is consistent with economic theories of discount pricing by sellers of higher-priced, higher quality experience goods as an inducement to purchase when uncertainty about product quality is resolved through buying (experiencing) the good. In their study, initial discount is 30.4% for changes

from small firms to large firms. As the large firm premium is 39.1%, the large firms are forfeiting this premium in order to allow companies to ‘experience’ their goods. Similar results are obtained in Gregory and Collier. They find that the size of reduction for changes from small firms to large firms is around 33.6%, as opposed to 20.2% for a change between large firms. The large firm premium is 13.7%, suggesting that the large firms forego the large firm premium, in addition to ‘standard’ initial fee discount, as an additional incentive to persuade the auditees of smaller firms to switch auditors.

### **3. Data**

The initial dataset used in this study consisted of all the publicly quoted companies, excluding AIM, in the UK London Stock Exchange during the period between 1996 and 2005. The dataset was compiled using FAME annual CD-ROMs. Investment trusts and financial institutions were also excluded from our analysis because of their differences in financial reporting compared to that of manufacturing and retailing companies. It was noted that there has been a significant decrease in the number of manufacturing and retailing companies listed on the main market during the ten year period.

Information on company auditors and financial information were also obtained from FAME. We only included a company if we could obtain information on its auditor<sup>2</sup>, audit fees paid, total assets, shareholders funds, profit before taxation and number of subsidiaries. Summary statistics of the resulting sample is presented in Table 2.

(Insert Table 2)

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<sup>2</sup> Companies with joint auditors were excluded FROM our analysis.

#### 4. Model

Hay, Knechel and Wong (2006) evaluate and summarize the most commonly used independent variables used in audit fee models. The variables can be classified into three categories: client attributes, auditor attributes and engagement attributes. Client attributes include size of clients (as proxy by total assets), complexity (number of subsidiaries), profitability, leverage (debt/total assets), industry, internal controls and governance. Auditor attributes include auditor quality (as proxied by a big firm dummy), auditor change and auditor location. Engagement attributes include report lag, busy season, audit problems and non-audit services. They note that several variables especially the variables that represent engagement attributes show no clear pattern to the results. They also point out that few researchers have had access to data for the variables of engagement attributes and some of the variables of the clients' attributes (internal control and governance). Due to data availability, we use the following model:

$$\begin{aligned} \ln F_{i,t} = & \beta_1 \ln A_{i,t} + \beta_2 Gear_{i,t} + \beta_3 Prof_{i,t} + \beta_4 Lon_{i,t} + \beta_5 Sub_{i,t} + \beta_6 ACBB_{i,t} + \beta_7 ACOB_{i,t} + \beta_8 ACBO_{i,t} \\ & + \beta_9 ACOO_{i,t} + \beta_{10} Big_{i,t} + \beta_{11} 1997_{i,t} + \beta_{12} 1998_{i,t} + \beta_{13} 1999_{i,t} + \beta_{14} 2000_{i,t} + 2\beta_{15} 2001_{i,t} \\ & + \beta_{16} 2002_{i,t} + \beta_{17} 2003_{i,t} + \beta_{18} 2004_{i,t} + \beta_{19} 2005_{i,t} + a_i + \varepsilon_{i,t} \end{aligned}$$

where for auditee  $i$  at time  $t$ ,

$\ln F_{i,t}$  = natural logarithm of audit fees

$\ln A_{i,t}$  = natural logarithm of total assets

$Gear_{i,t}$  = gearing ratio

$Prof_{i,t}$  = inflation adjusted profit before taxation

$Lon_{i,t}$  = location dummy (=1 if London, 0 otherwise)

$Sub_{i,t}$  = number of subsidiaries

$Big_{i,t}$  = auditor dummy (=1 if auditor is a member of the Big 4)

$ACBB_{i,t}$  = auditor change dummy (=1 if a change from a large auditor to another large auditor)<sup>3</sup>

$ACBO_{i,t}$  = auditor change dummy (=1 if a change from a large to a small auditor)

$ACOB_{i,t}$  = auditor change dummy (=1 if a change from a small to a large auditor)

$ACOO_{i,t}$  = auditor change dummy (=1 if a change from a small auditor to another)

$1997_{i,t} \dots 2005_{i,t}$  are year dummies,  $a_i$  are firm-specific effects,  $\varepsilon_{i,t}$  are random errors and  $\beta_j$  are the coefficients

We chose to use simple panel data methods in our analysis as opposed to cross sectional regression analysis, which is commonly used in the low-balling literature. With panel data methods, we are able to capture the company specific unobservable factors which affect audit fees. These unobservable factors, as mentioned above, include the effectiveness of the internal control system of a company, the working relationship between a company and its auditor and the integrity of a company. Also, we chose to use the fixed effects model as opposed to the random effects model. This is because the fixed effects model allows correlation between the unobservable factors ( $a_i$ ) and the other explanatory variables while the random effects model does not. In our analysis, it is likely that there is correlation between  $a_i$  and the explanatory variables. For example, a large company tends to have the resources for a better internal control system. However, we did subsequently also carry out random effects analysis and the results are consistent with those of the fixed effects analysis.

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<sup>3</sup> The switch of auditors from PW/CL to PwC or AA to DT was not classified as a change.

It should be noted that low-balling is not necessarily associated with a change of auditors. For example, there may be cases where an incumbent auditor of a company lowers the audit fees to retain a client because of a low-balling threat from another auditor. These cases are unobservable and are not examined in our analysis. In our research, we are aiming to provide evidence of any association between low-balling and an actual change of auditors.

## **5. Results**

### *5.1 Auditor Concentration*

In 1996, the Big Six dominated the market, although 75 audit firms rendered audit services for the 1,225<sup>4</sup> listed companies. The market share of the Big Six ( $C_6$ ) was 94% based on total audit fee income and 79% based on the number of audits. The respective Herfindahl indexes were 17% and 12%, implying that the audit services market was the equivalent of a market comprising 6 and 8 equal sized firms, depending on the size measurement used.

(Insert Tables 3 and 4)

After the merger of CL and PW in 1998, PwC became the largest audit firm. By 2001, the market share of the Big 5 ( $C_5$ ) was 96% based on total audit fee income and 83% based on the number of audits. It should be pointed out that the PwC merger had not generated any gains in market share for PwC. On the contrary, the market share of PwC had dropped from 46% in 1998 to 38% in 2001 when audit fee income was used (28% to 27% when number of audits was used).

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<sup>4</sup> We included financial institutions in our concentration analysis.

The collapse of AA in 2001 saw an immediate increase in the market share of Deloitte & Touche ('DT') (from 12% in 2001 to 21% 2002 for audit fee income and from 13% to 21% for the number of audits). By 2005, the market share of DT had dropped to 20% for audit fee income, but had increased slightly to 22% for the number of audits.

Over the ten year period, there was an increase in the audit services market concentration, as evidenced by several indicators. Firstly, the total number of audit firms which provided audit services to listed companies had dropped from 75 to 31. Secondly, the market share of the large firms increased slightly from 94% in 1996 to 98% in 2005 for audit fees and from 79% to 86% for the number of audits.

## 5.2 Audit Prices

As expected, strongly significant results in Table 5 (Model 5.1) show that audit fees increased as size ( $\ln TA$ ), complexity ( $Sub$ ) and risk ( $Gear$ ) of a company increased. However, there is no significant evidence that audits were more expensive if they were carried out in London. The dummy variable  $Big$  was positive and statistically significant at 5% level. The result suggested that the large firms (Big Six/Five/Four) were charging a premium<sup>5</sup> of 20%. Compared to the audit prices in 1997, there was no evidence of **nominal** price changes until 2001, but then strong increases between 2001 and 2005 of 28% (significant positive coefficients for the year dummies, increasing over the 5 years). However, given that the RPI had risen by 22% since 1997, increases in **real** audit prices can be viewed as moderate in size and occurring late in the time span.

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<sup>5</sup> Large firm premium =  $e^{\text{coefficient of variable } Big} - 1$

Estimating the model in real terms, allowing for the nominal increases in the other financial variables, indicates a significant 14% increase in real audit fees by 2005.

(Insert Table 5)

The results of the findings for 1998 to 2000 supports the findings of Pong and Burnett, that the PwC merger had not led to any change in audit prices. In fact, the reduction in market concentration as a result of the PwC merger resulted in a small drop in audit prices (about 0.4%) over the three year period. The price increase of 28% during the five year period from 2001 to 2005 supports the suggestion that, following the demise of Enron and other business failures, companies have implemented better corporate governance structure and regulators have implemented tighter regulations (for example, the Sarbanes-Oxley Act in the US) to improve the quality of information as presented in financial statements. Both implementations lead to an increase in the amount of audit work purchased. We did not find evidence to support the notion that the increase in concentration has led to an increase in audit fees and therefore this does not support Oxera (2005) that the market has become less competitive. We found that the concentration variable  $Con^6$  was not statistically significant (see Model 5.2).

### *5.3 Low-Balling*

Results of the model 5.1 show that the coefficients of ACBB, ACOB, ACBO and ACOO are -0.078, -0.079, +0.012 and +0.004. However, only the ACBB and ACOB

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<sup>6</sup> The variable *con* is based on the Herfindahl Index presented in Table 3.

coefficients are statistically significant. The result suggests that the type of auditor change does make a difference to the fee reduction experienced. There was a reduction of 7.5% audit fees for a change between large audit firms and 7.6% when it was an 'upgrade' to a large auditor. Reduction of fees was also observed in Gregory and Collier for the two types of change but the magnitude was larger, -20.2% and -33.6% respectively. Similar to Craswell and Francis, but contrary to Ghosh and Lustgarten, we do not observe any reduction in fees both for auditor change between small auditors and for 'downgrade' change to a small auditor.

The results are thus consistent with the Craswell and Francis explanation that the discount pricing by large auditors, who claim to provide superior audit quality service, is a strategy to induce companies to purchase their audit services when uncertainty about audit quality can only be resolved through buying (experiencing) the service. The large auditor effectively forfeits part of its large firm premium fee (20%) in the first year of engagement. This strategy is not applicable to small auditors as it is unlikely that they can convince company directors that they can provide better audit quality product than the large auditors.

Simon and Francis (1988) reported a significant fee reduction in the initial engagement year that averaged 24 per cent of normal fee levels for ongoing engagements, an average fee reduction of 15% for the next two years, and by the fourth year the fee had increased to normal levels for continuing engagements. Therefore, we further investigated the fee pattern for four years after the change of auditors. It should be pointed out that the data sample was significantly reduced as a result of the use of four lag periods.

Consistent with earlier studies, audit fee reductions continued for two years after an auditor change (see Model 5.3). In the case of a change between large auditors, the initial reduction was 6.8% and average fee reduction of 6.0% for the next two years. By the third year, the audit fee had increased to the normal levels of continuing engagements. In the case of an upgrade to a large auditor, reductions were also observed initially and for the first two years, but the magnitudes were much larger (22.2%, 13.7% and 9.1% respectively).

## **6. Further Analysis**

### *Pre- and Post- Enron*

We further examine the practice of low-balling before and after the Enron case, in Table 6. Again both pre- and post-Enron, we found evidence of low-balling for cases of auditors change between large auditors (pre-Enron: 7.2%, post-Enron: 8.0%) and cases of upgrade to large auditors (pre-Enron: 6.8%, post-Enron: 7.7%). The results indicate that low-balling practice continued after the Enron case.

(Insert Table 6)

## **7. Limitations**

### *Low-balling and consultancy fees*

One complicating factor in the analysis of audit fees is that auditors frequently provide additional consultancy services, which are charged separately. There exists a potential for cross-subsidization between audit and non-audit fees, particularly when a change of auditors occurs. When a company changes its auditors, the company is likely to use the incoming auditors for future advisory services. Some critics may

even argue that low-balling is used to enable auditors to cross-sell other services at more lucrative rates.

We do have information on non-audit fee income post-1999 and have attempted to include it in our analysis. However, whilst audit fees can be treated as a price for a (reasonably) homogenous product – an annual audit – no such homogeneity of product can be claimed for consultancy services. Hence, any cross-subsidization would be very difficult to identify.

Making the heroic assumption that auditors are mainly interested in overall fee income, allows audit and non-audit fees to be aggregated and the empirical analysis of Table 5 was repeated for total fees (not reported). The results support the earlier ones, with significant discounting for changes to large auditors – of a similar magnitude for changes from smaller auditors, but almost twice as large for change from another large auditor. This discounting is relative to a substantial ‘large auditor’ premium of 37%.

Our results do not provide evidence that the new auditors managed to extract additional non-audit service fee income from the new clients. In fact, there were substantial reductions in non-audit services fee income.

There can be several possible reasons for such an observed reduction in non-audit services fees. First, the company might be still taking non-audit services from its former auditors. The non-audit fees disclosed in the financial statements relate only to the amount of consultancy fees that a company pays to its auditors. Second, the

new auditor might reduce the price of its non-audit service, the aim of which is to give the new client experience of their quality of work (both audit and consultancy).

## **8. Conclusion**

This paper has reported new empirical evidence about low-balling practice in the U.K. audit services market for quoted companies. The evidence is based on audit price data for the period 1996-2005. The results may be summarised as follows:

- (1) Over the ten year period, there was an increase in the audit services market concentration.
- (2) There has been an increase in audit prices post-Enron.
- (3) Increase in audit services market concentration has not led to an increase in audit fees per se.
- (4) There was a reduction of audit fees for companies who changed between large audit firms and when there was an upgrade to a large auditor.
- (5) There was no reduction in fees both for change between small audit firms, nor for downgrade change to a small firm.
- (6) There was also a reduction of non-audit fees when there was a change between large audit firms and when there was an upgrade to a large auditor.
- (7) Low-balling practice continued after the Enron case.

In conclusion, the U.K. audit services market remains competitive. Contrary to the findings of Oxera (2006), we did not find evidence that the increase in the audit services market concentration has led to an increase in audit prices. This was especially the case during the three year period from 1998 to 2001. Although there

has been a substantial price hike since 2001, this may be due to the increased regulation on company reporting as a result of the failure of Enron.

Low-balling is a characteristic of a competitive audit services market. We found evidence that there was a reduction of audit fees only when there was a change between large audit firms and when there was an upgrade to a large auditor. The findings therefore do not support DeAngelo, who predicts that we should observe a competitive discounting in all cases of auditor change. Also, the findings do not support Dye, who predicts that we should not observe discounting in auditor change cases where audit fees are publicly disclosed. However, the results are consistent with Craswell and Francis, who suggest that the discounting is used as an inducement to purchase when uncertainty about product quality is resolved through experiencing the good.

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**Table 1**  
**Summary of Low-Balling Studies**

<u>Study</u>	<u>Period</u>	<u>No. of companies</u> <u>(Country)</u>	<u>Auditor Change</u>					
			<u>Large firm</u> <u>premium</u>	<u>Large firm</u> <u>&gt;Large firm</u>	<u>Small firm</u> <u>&gt;Large firm</u>	<u>Large firm</u> <u>&gt;Small Firm</u>	<u>Small firm</u> <u>&gt;Small firm</u>	
Simon and Francis (1988, table 3)	1979-1984	440 (US)	+16.2% (*)				-23.7% (*)	
Ettredge and Greenberg (1990, table 4)	1984-1987	389 (US)	---	Companies switching from a large audit firm to a small audit firm (or vice versa) receive about 11% more (less) fee cuts than that expected for switches to auditors of the same class.				
Pong & Whittington (1994, table 3)	1982-1988	577 (U.K.)	+ve (*)		-ve			-ve (*)
Gregory and Collier (1996, table 5)	1987-1991	399 (U.K.)	+13.7% (*)	-20.2% (*)	-33.6% (*)	---	---	---
Craswell and Francis (1999, table 2)	1985-1987	1,468 (Australia)	+39.1% (*)	-11.0%	-30.4% (*)	+25.2%		+5.4%
Ghosh and Lustgarten (2006, table 4)	2001-2003	5,988, 4,982, 5,514 (US)	+5.1% (*)	-10.4% (*)	-1.0%	-2.0%		-13.9% (*)

\* statistically significant at 5% level

**Table 2**  
**Summary statistics**

	Fees (£'000)	Total Assets (£'000)	<u>Mean</u>						<u>Number of Cases</u>				
			<u>Big 4</u>	<u>Gear</u>	<u>Profit</u>	<u>Lon</u>	<u>Sub</u>	<u>AC</u>	<u>ACBB</u>	<u>ACOB</u>	<u>ACBO</u>	<u>ACOO</u>	<u>Sample</u>
1997	243	546369	0.798	0.169	0.858	0.133	24.292	0.037	23	12	4	3	1126
1998	256	1062918	0.796	0.183	0.830	0.203	29.367	0.050	25	11	12	7	1103
1999	284	1494948	0.797	0.208	0.816	0.212	31.056	0.051	19	16	13	4	1012
2000	364	1979077	0.814	0.187	0.748	0.326	33.218	0.043	15	13	5	8	952
2001	400	2136875	0.828	0.203	0.665	0.331	35.756	0.071	29	16	13	7	919
2002	431	1348690	0.847	0.221	0.695	0.320	37.830	0.071	29	11	6	10	790
2003	505	1455703	0.848	0.234	0.739	0.323	43.896	0.047	20	2	8	4	724
2004	599	1596055	0.840	0.239	0.786	0.322	46.158	0.043	10	2	7	9	650
2005	718	2125939	0.854	0.270	0.821	0.330	51.153	0.051	11	8	5	6	588
All	391	1469386	0.820	0.206	0.777	0.266	35.275	0.051	181	91	73	58	7864

**Table 3****Market concentration – based on audit fees**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
AA	7.430	9.451	9.243	8.216	8.351	6.980				
CL	21.719	23.658								
DT	8.574	8.285	7.953	9.676	9.396	11.555	21.249	18.732	18.854	19.768
EY	18.521	14.284	12.766	15.353	15.498	13.205	16.077	19.018	18.592	21.825
KPMG	21.691	23.014	18.177	24.817	25.242	26.743	21.876	19.852	20.899	17.231
PW/PwC	15.723	15.392	46.395	37.160	37.540	37.967	37.789	39.846	37.981	38.781
BIG	93.658	94.084	94.534	95.221	96.028	96.450	96.991	97.448	96.327	97.606
BH	1.211	0.495	0.216							
BT	0.012	0.302	0.452	0.332	0.335	0.336	0.446	0.453	1.250	0.333
GT	0.813	1.010	0.996	1.022	0.917	0.787	0.528	0.543	0.701	0.630
KID	0.132	0.171	0.201							
PKF	0.456	0.488	0.463	0.273	0.285	0.136	0.086	0.091	0.094	0.095
RR	0.538	0.520	0.283	0.350	0.280	0.233	0.195	0.123	0.145	0.189
SH	0.934	1.078	1.330	1.357	1.013	0.934	0.875	0.568	0.577	0.500
MEDIUM	4.096	4.064	3.941	3.334	2.830	2.425	2.129	1.778	2.767	1.747
SMALL	2.246	1.852	1.526	1.444	1.142	1.125	0.880	0.774	0.906	0.647
HI	0.167	0.169	0.280	0.240	0.245	0.252	0.262	0.270	0.258	0.262
Sample No. of auditors	1225	1330	1193	1100	1027	961	819	757	677	637
	75	74	60	54	52	51	42	39	37	31

Note

AA: Arthur Andersen, CL: Coopers & Lybrand, DT: Deloitte Touche, EY: Ernst & Young, PW: Price Waterhouse, PwC: PricewaterhouseCoopers  
 BH: Binder Hamlyn, BT: Baker Tilly, GT: Grant Thornton, KID: Kidsons Impey, PKF: Pannell Kerr Forster, RR: Robson Rhodes, SH: Stoy Hayward

**Table 4****Market concentration – based on number of audits**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
AA	7.184	8.722	9.556	10.364	10.127	9.469				
CL	15.184	15.113								
DT	10.286	10.376	10.478	11.000	11.685	12.695	21.245	22.193	21.713	21.507
EY	12.408	11.278	11.316	11.909	12.074	12.591	13.919	13.606	13.442	14.129
KPMG	20.653	20.226	20.453	20.182	20.837	21.228	21.612	20.740	20.532	22.135
PW	13.061	13.233	27.829	26.636	27.069	26.535	27.961	28.269	28.508	28.257
Big	78.776	78.948	79.632	80.091	81.792	82.518	84.737	84.808	84.195	86.028
BH	2.694	1.729	0.503							
BT	0.163	0.827	1.257	1.182	1.168	1.665	2.198	2.378	2.659	2.041
GT	2.694	3.083	3.521	3.818	3.895	3.434	2.808	2.774	2.511	2.355
KID	0.735	0.827	1.090							
PKF	1.469	1.353	1.341	1.273	1.363	0.937	0.611	0.661	0.739	0.785
RR	1.633	1.579	1.341	1.727	1.655	1.561	1.221	0.925	0.886	0.785
SH	3.347	3.684	4.610	4.364	3.408	3.642	2.808	2.774	3.102	3.140
Medium	12.735	13.082	13.663	12.364	11.489	11.239	9.646	9.512	9.897	9.106
Small	8.489	7.970	6.705	7.545	6.719	6.243	5.617	5.680	5.908	4.866
HI	0.117	0.116	0.156	0.153	0.159	0.160	0.192	0.193	0.191	0.197
Sample	1225	1330	1193	1100	1027	961	819	757	677	637
No. of auditor	75	74	60	54	52	51	42	39	37	31

Note:

AA: Arthur Andersen, CL: Coopers & Lybrand, DT: Deloitte Touche, EY: Ernst & Young, PW: Price Waterhouse, Pwc: PricewaterhouseCoopers  
 BH: Binder Hamlyn, BT: Baker Tilly, GT: Grant Thornton, KID: Kidsons Impey, PKF: Pannell Kerr Forster, RR: Robson Rhodes, SH: Stoy Hayward

**Table 5 Low-balling and Period of Recovery**

	Model 5.1			Model 5.2			Model 5.3		
	Coef.	t-stat.*	Prob.	Coef.	t-stat.*	Prob.	Coef.	t-stat*.	Prob.
<i>A</i>	-0.461	-2.435	0.015	-0.458	-2.432	0.015	-0.483	-3.285	0.001
<i>LnTA</i>	0.437	23.863	0.000	0.437	23.863	0.000	0.423	31.134	0.000
<i>Gear</i>	0.111	3.348	0.001	0.111	3.348	0.001	0.149	1.749	0.080
<i>Profit</i>	-0.085	-7.534	0.000	-0.085	-7.534	0.000	-0.090	-8.851	0.000
<i>Lon</i>	-0.016	-1.607	0.108	-0.016	-1.607	0.108	---	---	---
<i>Sub</i>	0.001	10.188	0.000	0.001	10.188	0.000	0.002	5.102	0.000
<i>ACBB</i>	-0.078	-3.271	0.001	-0.078	-3.271	0.001	-0.070	-3.955	0.000
<i>ACBB(-1)</i>	---	---	---	---	---	---	-0.059	-4.462	0.000
<i>ACBB(-2)</i>	---	---	---	---	---	---	-0.065	-4.089	0.000
<i>ACBB(-3)</i>	---	---	---	---	---	---	0.001	0.152	0.879
<i>ACBB(-4)</i>	---	---	---	---	---	---	0.016	0.729	0.466
<i>ACOB</i>	-0.079	-3.596	0.000	-0.079	-3.596	0.000	-0.251	-3.640	0.000
<i>ACOB(-1)</i>	---	---	---	---	---	---	-0.147	-5.371	0.000
<i>ACOB(-2)</i>	---	---	---	---	---	---	-0.095	-2.896	0.004
<i>ACOB(-3)</i>	---	---	---	---	---	---	-0.027	-0.465	0.642
<i>ACOB(-4)</i>	---	---	---	---	---	---	-0.008	-0.174	0.862
<i>ACBO</i>	0.012	0.243	0.808	0.012	0.243	0.808	---	---	---
<i>ACOO</i>	0.004	0.088	0.930	0.004	0.088	0.930	---	---	---
<i>BIG</i>	0.182	4.657	0.000	0.182	4.657	0.000	0.431	16.010	0.000
<i>1998</i>	-0.002	-0.691	0.490	---	---	---	---	---	---
<i>1999</i>	-0.001	-0.187	0.852	0.000	0.025	0.980	---	---	---
<i>2000</i>	-0.004	-0.436	0.663	-0.003	-0.355	0.723	---	---	---
<i>2001</i>	0.027	2.269	0.023	0.028	2.535	0.011	---	---	---
<i>2002</i>	0.090	7.877	0.000	0.092	8.536	0.000	0.047	15.800	0.000
<i>2003</i>	0.150	13.512	0.000	0.152	14.461	0.000	0.105	22.553	0.000
<i>2004</i>	0.223	18.206	0.000	0.224	19.050	0.000	0.178	54.498	0.000
<i>2005</i>	0.249	17.005	0.000	0.250	17.790	0.000	0.203	36.570	0.000
<i>Con</i>	---	---	---	-0.015	-0.691	0.490	---	---	---
Sample		7555			7555			2655	
R-square		0.959			0.959			0.970	

\* based on White estimates.

**Table 6 Low-balling pre and post Enron**

	Model 6		
	<u>Coef.</u>	<u>t-stat.*</u>	<u>Prob.</u>
<i>A</i>	-0.436	-2.251	0.024
<i>LnTA</i>	0.436	23.582	0.000
<i>Gear</i>	0.108	3.291	0.001
<i>PROF</i>	-0.085	-7.593	0.000
<i>Sub</i>	0.001	10.009	0.000
<i>Big</i>	0.162	4.954	0.000
<i>Big-post</i>	0.051	2.677	0.007
<i>ACBB-pre</i>	-0.075	-2.235	0.026
<i>ACOB-pre</i>	-0.070	-2.674	0.008
<i>ACBO-pre</i>	0.038	0.674	0.501
<i>ACOO-pre</i>	-0.036	-0.537	0.591
<i>ACBB-post</i>	-0.083	-2.222	0.026
<i>ACOB-post</i>	-0.080	-2.046	0.041
<i>ACBO-post</i>	-0.053	-1.287	0.198
<i>ACOO-post</i>	0.053	1.242	0.214
<i>1998</i>	-0.002	-0.912	0.362
<i>1999</i>	-0.002	-0.301	0.763
<i>2000</i>	-0.006	-0.573	0.567
<i>2001</i>	0.026	2.041	0.041
<i>2002</i>	0.046	3.344	0.001
<i>2003</i>	0.106	7.321	0.000
<i>2004</i>	0.179	13.194	0.000
<i>2005</i>	0.205	13.735	0.000
Sample		7555	
R-square		0.959	

\* Based on White estimates.