Examination of Audit Fee Premiums and Auditor Switching Pre and Post the Demise of Arthur Andersen and the Enactment of Sarbanes-Oxley Act

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Abstract

In light of the dramatically changing audit environment, we re-examine audit fee premiums and the effect of auditor switching on audit fees along the timeline from 2000 to 2005. Using the treatment effects model, we find that before the demise of Andersen and the passage of SOX, there were no audit fee premiums but that there was a reverse trend afterward. Furthermore, we classify the audit firms into three segments: Big N, second-tier (Grant Thornton and BDO Seidman), and third-tier (others). Our findings show a selectivity bias between Big N and second-tier firms but no selectivity bias between second- and third-tier audit firms. In addition, we find that while Big 4 auditors do not charge fee premiums over second-tier auditors, second-tier auditors charge audit fee premiums over third-tier auditors. Our results show a low-balling effect in 2002, consistent with prior studies, and that audit firms charge extra fees to the clients downward switching from Big 4 to non-Big 4 audit firms. While risk can partly explain extra fees charged to the downward switching clients in 2004, it cannot explain this phenomenon in other years.

Keywords: Audit fee premium, Selectivity bias, Treatment effects model, Auditor switches, Three tiers of auditors

I. Introduction

The demise of Arthur Andersen and the enactment of the Sarbanes-Oxley Act (SOX) have dramatically changed the U.S. audit market (Landsman, Nelson, and Rountree 2006). This strict regulatory environment has raised audit risk, and a considerable increase in audit demand has cause a shortage of auditors for all public accounting firms. In light of this changing environment, Big 4 auditors are significantly increasing audit fees (Asthana, Balsam, and Kim 2004) and carefully screening both existing and potential clients (Schloetzer 2006) to reduce litigation risk. Prior studies report mixed findings on audit fee premiums (e.g., Simunic 1980, Taffler and Ramalinggam 1982, Francis 1984, Francis and Stokes 1986, Palmrose 1986, Francis and Simon 1987, Chung and Lindsay 1988, Pong and Whittington 1994, Firth 1997, Ferguson and Stokes 2002). This study uses a treatment effects model to examine how the change in audit market and regulation affects audits fee premiums.

Furthermore, there have been an increasing number of auditor switches after 2001. The reasons for these switches may be due either to clients' concerns for audit costs and services (Bockus and Gigler 1998; Holland et al. 1993; Berton 1995) or to auditors' concerns about clients' profitability and risk (Asthana et al. 2004, Schloetzer 2006, GAO 2006, Landsman et al. 2006). There are three directions of auditor switches: downward (from Big N[1] to non-Big N), upward (from non-Big N to Big N), and lateral (within the same tier). After 2002, more companies have made a downward switch of auditors (Landsman et al. 2006; Schloetzer 2006; Ettredge, Li, and Scholz 2005).[2] In this study, we explore both the overall effects of auditor

[1] For the specific time period (i.e., pre and post the demise of Andersen), we use either Big 5 or Big 4 to refer to the large accounting firms. However, we use "Big N" when it involves a general concept of the five or four large accounting firms during the sample period.

[2] According to Audit Analytics, 1,737 companies departed from Big 4 audit firms and 1,137 (65%) of them switched to non-Big 4 audit firms between January 1, 2003 and December 31, 2005 (Grant Thornton 2006).

switching and the switches in different directions.

Almost all the previous studies have examined whether the audit market is classified into two categories, Big N and non-Big N auditors (e.g., Simunic 1980, Chaney et al. 2004). Clearly, among non-Big N auditors there are national, regional and local firms that possess different resources and employ different strategies (e.g., pricing, investment in technology and training etc.) that subsequently affect the market structure.[3] The divergence among non-Big N audit firms becomes more apparent after the recent change in regulations. Therefore, we examine whether auditor selection and audit pricing follow a three-tier classification of audit firms: Big N, second-tier (Grant Thornton and BDO Seidman)[4], and third-tier (others).

Our study contributes to the extant literature on audit fees in four respects. First, our study supports previous arguments indicating a lack of audit fee premiums in 2000 and 2001 and also shows the existence of audit premiums after the demise of Andersen and the passage of SOX. These results illustrate the impact of the changing audit market and regulations on audit fee premiums. The lack of audit fee premiums in 2000 and 2001 suggests that both Big 5 and non-Big 5 clients selected auditors based on a cost-efficiency consideration. And, the presence of audit fee premiums after 2001 indicates that Big 4 clients would have paid less audit fees had they chosen non-Big 4 auditors.

Second, this study further classifies non-Big 4 audit firms into second and third tiers to examine audit fee premiums and the impact of audit switches on audit fees. Using a three-tier audit firm classification, we find that a selectivity bias exists

[3] We observe a declining market share of Big 4 audit firms in U.S. However, there has been a concern by regulators and investors in UK that Big 4 audit firms build an "excessive" market share (i.e., all but one of the companies in the FTSE 100 and 97% of the FTSE 250) (Japson 2006).

[4] According to rankings by revenue, Grant Thornton (GT) and BDO Seidman (BDO) are next to Big 4 auditors. GT received the most benefit in the second-tier firms due to Andersen's demise. Someone argues that the U.S. audit market includes Big 4, GT, and then everyone else. Furthermore, Ashbaugh-Skaife, Collins and Kinney (2006) also include GT, BDO and Big 4 audit firms as dominant suppliers.

between Big N and second-tier auditors but not between second- and third-tier auditors. This indicates that client firms do not distinguish between second- and third-tier audit firms and still use the two-tier classification (Big N vs. non-Big N) in selecting auditors. On the contrary, we do not find any audit fee premiums between Big N and second-tier auditors. However, second-tier auditors charged audit fee premiums over third-tier auditors across all years, implying that second-tier auditors consider their reputation and audit quality to be comparable to that of Big N auditors. As such, our results suggest that future research on audit pricing should further investigate the discrepancy between audit fees charged by three tiers of audit firms and how companies select their auditors.

Third, we provide empirical evidence for the effect of auditor switching on audit fees, both overall and in different directions, along the timeline of the changing environment. We find that the departed companies tend to select auditors whose clients share similar firm characteristics and that the downward switches generally are comprised of much smaller companies. Our results show that only downward switching clients were charged extra fees for the initial engagements after the enactment of SOX (2003, 2004 and 2005). Also, extra fees were charged not only by second-tier auditors but also by third-tier auditors. This suggests that in the strict regulatory environment, non-Big 4 auditors may perform more audit procedures on the former Big N clients with potentially higher litigation risk and therefore charge them higher audit fees. However, our additional analysis shows that risks of downward switching clients cannot account for higher audit fees charged by non-Big 4 auditors (with an exception of 2004). Furthermore, Consistent with prior studies on Andersen effects (Asthana et al. 2004, Chi 2004), we observe that auditors low-balled fees to attract new clients in 2002. This low-balling effect is mainly attributed to Big

4 auditors' attracting both former Andersen and non-Big 4 clients.

Fourth, we also contribute to the research methodology in the literature. Some studies argue that the mixed findings on audit fee premiums may be partly attributed to the assumption of the exogeneity of the auditor selection (Copley et al. 1995, Chaney et al. 2004 and 2005). In this study, we use the treatment effects model, which treats the auditor selection as endogenous. There are two reasons that we use the treatment effects model instead of the Heckman model as in Chaney et al. (2004, 2005). First, the Heckman model is mostly used in labor economics because the wages of non-participants of labor force are not observable. However, the audit fees of both Big N and non-Big N clients are available. Second, the Heckman model may generate unreasonable and illogical results. Chaney et al. (2004) emphasize the importance of using different slope coefficients of the audit fee determination equations to capture audit firms' different investments in training, technologies, and facilities. However, the Heckman model truncates samples and only keeps one type of auditor selection to run the regression, which may generate unreasonable and illogical results due to extrapolation beyond the scope from which the model is derived (Hogan 1997).[5] In contrast, the treatment effects model pools all observations of the whole sample to run the second-stage regression and can avoid such problems. Furthermore, we demonstrate that using a nonlinear model to capture the relation between audit fees and client size can avoid sensitivity to minor changes in different model specifications (Francis and Lennox 2006).[6]

The remainder of this paper is organized as follows. Section 2 discusses prior

[5] For example, using the Heckman model and the U.S. data of 2001, Chaney et al. (2005) report a mean difference between natural logarithm of actual fees and the alternative fees (if hire the other group of audit firms) of -2.58, which denotes that the actual audit fees are only 8 percent of the alternative fees. This is because natural log of actual fees is the dependent variable. Therefore, the mean difference of -2.58 denotes that the actual audit fees are 8 percent of the alternative fees.

[6] They criticize the Chaney et al. (2004)'s model as sensitive to model specifications (e.g., different proxies of firm size), which may result in different conclusions on audit fee premium.

studies and the hypothesis development. Section 3 describes the method, including our sample data and models, followed by empirical results in Section 4. Section 5 presents our robustness check and the final section provides a summary and conclusion.

2. Prior Research and Hypotheses Development

2.1 Audit Fee Premium

Auditing theories suggest that audit fee premiums charged by large audit firms can be attributed to their brand name or stronger reputations due to providing distinguished quality services to their clients (e.g., DeAngelo 1981b; Simunic and Stein 1987; Francis and Wilson 1988; Brinn et al. 1994; Lee 1996; Simon 1997; DeFond et al. 2000; Peel and Roberts 2003). DeAngelo (1981) defines the quality of audit service as the market-assessed joint probability that a given auditor will both discover a breach in a client's accounting system and report the breach. In general, audit service quality is positively related to the size of audit firms. Using the brand name investment model established by Klein, Crowford and Alchian (1978), Francis and Wilson (1988) argue that to secure and protect client-specific quasi-rents, Big N auditors need to develop and maintain their brand name reputations by conducting sufficient audit work and reporting independently. Otherwise, they may lose client-specific quasi-rents and also decrease their market shares.

Also, audit fee premiums can be attributed to large audit firms' abilities to reduce both agency costs (Jensen and Meckling 1976; Dopuch and Simunic 1982; Simunic and Stein 1987) and the costs of capital (Betty 1989). When a company hires a Big N auditor, it signals the audit quality and thereby reduces its agency cost (Palmrose 1986). The credibility demand arises in the circumstance of moral hazard as an important relationship to be addressed with the external agency. As suggested

by the demand-based model of product differentiation, high quality audit services can lower a company's internal agency conflict and can also enhance the external agency relationship (Simunic and Stein 1987). Furthermore, the audit fee premiums may stem from the market (monopolistic) power of Big N auditors over an audit market (Palmrose 1986). Balachandran and Ramakrishnan (1987) argue that audit fees are jointly determined by auditors' ability to monitor their clients and by the clients' ability to write contacts. The latter is affected by auditors' relative performance with other clients and their industry-specific expertise. Also, in a less competitive environment, large auditors normally possess higher negotiation power.

To the contrary, some auditing theories argue there should be no audit fee premiums because large accounting firms have the economy of scale and serve clients more efficiently (Simunic 1980; Francis and Stokes 1986). Therefore, they can transfer the cost savings to their clients instead of charging premiums for their reputation.

Just as there are conflicting arguments for audit fee premiums, empirical studies report mixed findings. For instance, some studies report audit fee premiums for public and non-public companies (Palmrose 1986) and small companies (Francis and Simon 1987) in the U.S. market. Similarly, audit fee premiums are observed in the U.K. (Taffler and Ramalinggam 1982, Pong and Whittington 1994) and Australian markets (Francis 1984, Francis and Stokes 1986, Ferguson and Stokes 2002). Conversely, some studies found no audit fee premiums in the U.S. (Simunic 1980), Canadian (Chung and Lindsay 1988), and Norwegian markets (Firth 1997). An important point to bear in mind is that most of the prior studies assume the selection of Big N and non-Big N auditors to be exogenous, i.e., client firms are randomly assigned to audit firms. Therefore, they examine audit fee premiums by including a

dummy variable of Big N auditor in an ordinary least squares (OLS) regression. However, as pointed out by Copley, Gaver, and Gaver (1995) the selection of Big N auditors is endogenous and the use of OLS to investigate audit fee premiums is inappropriate. Their argument is supported by Chaney et al. (2004, 2005) that, using a two-stage Heckman model (Heckman 1979 and Lee 1979), audit fee premiums for small UK firms as well as for U.S. firms (in 2001) revealed by the OLS regression disappear.

Given the mixed findings reported by previous studies and the recent finding of a lack of audit fee premiums by Chanel et al. (2004), we expect no audit fee premiums prior to the Andersen dissolution if the selectivity bias is considered. After 2002 the dramatic changes in the U.S. audit market have considerably lowered competition among auditors and increased demand in auditing service. Large auditors normally possess higher negotiation power and are likely to charge audit fee premiums in a less competitive environment. Therefore, the above discussions lead to the following hypothesis:

H1: No Big N audit fee premium exists before the demise of Arthur Andersen and the passage of the Sarbanes-Oxley Act, but it does emerge afterwards.

The business community has long classified the pubic accounting firms into Big N and non-Big N. Recently, there has been an emerging trend of non-Big 4 accounting firms being further classified into second- and third-tiers (SmartPros 2006). Normally, large clients hire Big N auditors since they have the requisite scale, technical knowledge or expertise to effectively conduct the audit (Francis 1984; Firth and Smith 1992; Pong 1999). Over the past years, second-tier audit firms have tried to improve their service and audit quality by making investment in technologies and employees training. After the demise of Andersen, second-tier audit firms competed with Big 4 audit firms for large audit clients. In the audit market reshuffling process,

there was quite a large overlap in the clients that Big 4 and second-tier audit firms compete for. Since 2001, second-tier firms such as Grant Thornton have experienced more than 30 percent growth each year. Grant Thornton's comparable audit quality and service and the small number of Big 4 audit firms have caused a growing voice favoring the inclusion of Grant Thornton in the Big N group. In light of the increasing reputation and comparable audit quality, second-tier audit firms may increase audit fees. Consequently, we predict that audit fee premiums do not exist between Big N and second-tier audit firms but that they do exist between second- and third-tier audit firms.

While quality and service of second-tier audit firms are comparable to that of Big N audit firms, the distinction between the two tiers of non-Big N audit firms may not be fully recognized by many client firms. As such, when client firms select auditors, they may still use the two-tier classification of Big N vs. non-Big N auditors that has been formulated for years. That is, client firms may view both second- and third-tier auditors as non-Big N audit firms and do not make further distinctions between them.

All in all, the above discussions lead us to predict that the self-selection bias exists between Big 4 and second-tier audit firms but does not exist between second- and third-tier audit firms. Regarding audit fee premiums, we expect to observe its existence between second- and third-tier auditors but not between Big 4 and second-tier auditors.

H2: There is a selectivity bias between Big 4 and second-tier auditors; however, there is no selectivity bias between second-tier and third-tier auditors.

H3: There are no audit fee premiums between Big 4 and second-tier auditors but between second-tier and third-tier auditors.

2.2. Auditor Switch and Audit Fees

When firms change auditors, there are start-up costs for the auditors and switching costs for the firms. DeAngelo (1981a) develops a model and argues that in accepting new clients, audit firms consider their expected future quasi-rents. In a competitive market, if the net present value of the future quasi-rents is positive, audit firms may low-ball their fees to attract new clients and consider the loss of the initial engagement as a sunk cost.

According to DeAngelo (1981a), there should be systematic low-balling for initial engagements in competitive markets, but empirical evidence does not consistently support her argument. For example, Simon and Francis (1988) report low-balling for the initial engagements and the next two years. Similarly, Deis and Giroux (1996) suggest low-balling for the initial audit engagements but not for the second year. However, Francis (1984), Palmrose (1986), and Simunic (1980) do not find low-balling for the initial engagements. To the contrary, Willekens and Achmadi (2003) report a positive correlation between audit fees and auditor switches in the Belgian private market in 1989 and 1997. They attribute this positive relation to sparse competition and to audit firms being able to charge the additional initial audit efforts to new clients.

The audit market was relatively competitive before the demise of Andersen. Therefore, we expect there was no effect of auditor switches on audit fees in 2000 and 2001. Clearly, the dissolution of Andersen has caused the market to reshuffle. Following Asthana et al. (2004) and Chi (2004), we expect that in 2002 both Big 4 and non-Big 4 auditors low-balled fees to attract former Andersen and other clients. The demise of Andersen has made the audit market less competitive and the passage of SOX have dramatically increased the demand for attestation service for both

financial reporting and internal control systems. Schloetzer (2006) developed an analytical model and argued that Big 4 auditors reduced their supply of audit services and that the price arose after the dissolution of Andersen and the passage of SOX. As such, we expect a positive impact of auditor switching on audit fees after the demise of Andersen and the passage of SOX.

H4: While there was no impact of audit switching on audit fees before the demise of Arthur Andersen and passage of the Sarbanes-Oxley Act, there was a low-balling effect in 2002 and a positive impact afterwards.

After the dissolution of Andersen and the passage of SOX, most of the firms changing auditors were of smaller size and made a downward switch (Landsman et al. 2006; Schloetzer 2006). This is consistent with Grant Thornton (2006)'s report that roughly 65 percent of the companies that changed auditors between January 1, 2003 and December 31, 2005 were from Big 4 to non-Big 4 auditors. These companies may either be forced out by Big 4 auditors due to their high risks (Schloetzer 2006) or could not sustain the prohibitive fees charged by Big 4 auditors (Ettredge et al. 2005). Also, these companies are characterized by negative income and higher leverage (Ettredge et al. 2005). Asthana et al. (2004) argued that higher audit fee increases are for riskier clients. Therefore, to couple with higher litigation risk in the strict regulatory environment, non-Big 4 auditors may demand a premium from the downward switching clients due to their potential higher risks. Furthermore, as suggested by Willekens and Achmadi (2003), in a less competitive market, non-Big 4 auditors are more likely to charge start-up costs for initial engagements of clients that downward switched from Big 4 auditors. On the other hand, clients with upward or lateral switching may have characteristics similar to their existing clients. As such, auditors may not charge extra fees for these clients. The above discussions lead us to the following hypothesis:

H5: After 2002 the upward and lateral auditor switching have no impact on audit fees; however, non-Big 4 auditors charge start-up costs for the downward switching clients.

3. Research Design

3.1 Sample Selection

To estimate audit fee premium and the effect of auditor switching, we obtained audit fees[7] and auditor information from Audit Analytics, firms' financial information from Compustat, and daily stock return (for risk factors) from CRSP. During our sample period between 2000 and 2005, we obtained 68,790 observations from Audit Analytics. When we merged the data from Audit Analytics with the data from Compustat and CRSP, we deleted 27,684 observations without matching firm/year in these two databases (see Table 1). Following prior studies, we exclude financial firms (SIC code between 6,021 and 6,799) because the financial ratios of financial firms are quite different from other firms. As a result, we delete another 7,627 observations. Furthermore, we deleted 743 subsidiaries since they normally follow their parent firms' selection of auditors and are not the decision-makers in auditor selection. Also, due to missing values from Compustat, we lose 7,726 observations. When firms switch auditors, they are listed more than one time in that year. To avoid duplications, we further delete 1,385 observations and keep only the engaged auditors. After excluding 6,805 observations with missing values from CRSP, our final sample consists of 17,820 observations.

Insert Table 1 about here

[7] For companies with auditor switches, it is difficult to obtain accurate audit fees since they involve an engaged auditor and a departed auditor at different charge rates. In Appendix C, we will have a detailed discussion of audit fee issues when firms switch auditors

3.2 Treatment Effects Model

As discussed earlier, it is inappropriate to use OLS models with a dummy variable of Big N (BIG_N) to examine the existence of Big N audit fee premiums. Therefore, we use a two-step treatment effects model (Li 1983, Wooldridge 2002, Green 2003). Detailed descriptions of the treatment effects model are included in Appendix B. In this study, the first step of the treatment effects model (i.e., the selection equation) is to use the following probit regression to determine the likelihood of selecting a Big N auditor. Also, to eliminate the serial correlation between different years, we run the regression models by year:

$$\begin{aligned} BIG\_N = {} & \gamma_0 + \gamma_1 LOGASSET + \gamma_2 ASSET\_TURN + \gamma_3 ROA + \gamma_4 DA + \gamma_5 QUICK \\ & + \gamma_6 INVENTORY + \gamma_7 RECEIVABLE + \gamma_8 NO\_EXPERTISE + \gamma_9 SEGMENTS \\ & + \gamma_{10} LOSS + \gamma_{11} FOREIGN\_SALES + \gamma_{12} NET\_LIABILITY + \gamma_{13} OPINION + \varepsilon \end{aligned}$$

We acquire all the estimates of γ's and then calculate the selectivity terms (lambda) for Big N and non-Big N clients, respectively. In the second step, we run the following audit fee determination equation:

$$\begin{aligned} LOGFEE = {} & \beta_0 + \beta_1 LOGASSET + \beta_2 SQ\_LOGASSET + \beta_3 ASSET\_TURN + \beta_4 ROA + \beta_5 DA \\ & + \beta_6 QUICK + \beta_7 INVENTORY + \beta_8 RECEIVABLE + \beta_9 BUSY\_SEASON \\ & + \beta_{10} SEGMENTS + \beta_{11} LOSS + \beta_{12} FOREIGN\_SALES + \beta_{13} NET\_LIABILITY \\ & + \beta_{14} OPINION + \beta_{15} SWITCH + \beta_{16} BIG\_N + \beta_{17} LAMBDA + v \end{aligned}$$

where:

LOGFEE=Natural logarithm of audit fees
ASSET=Total assets at a fiscal year end
LOGASSET=Natural logarithm of total assets
SQ_LOGASSET=The square of LOGASSET
ASSET_TURN=Asset turnover; sales divided by total assets
ROA=Return on assets
DA=Long-term debts to total assets ratio
QUICK=Quick ratio
INVENTORY=Inventory to total assets ratio
RECEIVABLE=Receivables to total assets ratio
SEGMENTS=The number of industry segments of a firm
LOSS=1 if net income before extraordinary items is less than zero, and 0 otherwise
FOREIGN_SALES=Foreign sales as a percentage of total sales
NET_LIABILITY=1 if a company's total liabilities are bigger than its total assets, and 0 otherwise
OPINION=1 if a company receives a qualified audit opinion, and 0 otherwise

BUSY_SEASON=1 if a company's fiscal year end falls between December 1st and March 31st, which is the normal busy season for auditors, and 0 otherwise
NO_EXPERTISE=1 if a company's audit committee has no financial expert, and 0 otherwise
SWITCH=1 if a firm changes its auditor in a year, and 0 otherwise

We first discuss the explanatory variables used in the audit fee determination equation, followed by a discussion of the remaining variables in the auditor selection equation. Consistent with prior studies, we expect that client firm size, complexity and risk will affect both auditor choices and audit fees. To control for audit effort, we include the natural log of total assets (LOGASSET) and asset turnover (ASSET_TURN). We believe there is a nonlinear relation between audit fee and client size and therefore we add the quadratic term of LOGASSET (SQ_LOGASSET) to the model. We will explain why this variable is added later. In addition, we control for audit risk by including variables for profitability (ROA), long-term (DA and NET_LIABILITY) and short-term financial structure (QUICK), and high risk assets (RECEIVABLE, INVENTORY). Other control variables that capture the effects of firm characteristics on audit fees include SEGMENT, FOREIGN_SALES, OPINION, SWITCH, and BIG_N. The prediction signs for the variables are presented in Table 4.

In Chaney et al. (2004), the independent variables of the auditor selection equation are a strict subset of the independent variables in the audit fee determination equation. Although the audit fee determination equation can be identified because of the nonlinear function of the selectivity terms, for better identification, it should include at least a variable in the auditor selection equation different from the variables in the audit fee determination equation (Maddala 1983). As such, we include NO_EXPERTISE (company's audit committee has no financial expert) in the auditor selection equation since it may affect the auditor selection but not the magnitude of

audit fees.[8]

4. Empirical Results

4.1. Descriptive Statistics

Table 2 shows the means and standard deviations for the whole sample, Big N and non-Big N clients. As expected, ASSET and FEE of Big N clients are significantly greater than those of non-Big N clients. Compared to non-Big N clients, Big N clients have higher DA, more business segments and higher FOREIGN_SALES, as well as lower ASSET_TURN, INVENTORY, RECEIVABLE, LOSS, NET_LIABILITY, and SWITCH. Furthermore, on average, Big N clients have higher BUSY_SEASON and OPINION than do non-Big N clients. However, there are no significant differences for ROA and QUICK between Big N and non-Big N clients. There is low percentage of audit committees without experts (NO_EXPERTISE) for big N clients than non-big N clients.

Insert Table 2 about here

4.2. Correlations

Table 3 presents correlation coefficients among variables used in the regressions. The correlation coefficient between LOGFEE and LOGASSET (0.799) is most notable, indicating firm size is the most significant determinant of audit fees. Of further interest are the positive correlations between LOGFEE and SEGMENTS (0.381) and FOREIGN_SALES (0.322), reflecting the complexity of auditing a firm. Also, the high positive correlation between LOGASSET and BIG_N (0.422) indicates the inclination of large firms to select Big N as their auditors. Overall, firm size is

[8] Audit Analytics does not have "no financial expertise" data in 2005. Therefore, we only include this variable from 2000 to 2004.

positively correlated with DA, SEGMENTS and FOREIGN_SALES and negatively related with QUICK and LOSS. Furthermore, ASSET_TURN is positively correlated with INVENTORY and RECEIVABLE.

Insert Table 3 about here

4.3. Audit Fee Premiums

H1—Big 4 vs. non-Big 4 auditors

We use the treatment effects model to determine if there are audit fee premiums charged by Big 4 over non-Big 4 auditors and the results are summarized in Table 4. As seen from panel A, LOGASSET is the most important determinant of auditor selection across the years. This suggests that the larger the firm is, the more likely it is to select Big N auditors, which is intuitively appealing and consistent with Chaney et al. (2004 and 2005). It is also consistent with the high correlation between Big N and LOGASSET (0.422) in Table 3. Also, the higher QUICK is the more likely for firms to select Big N auditors (from 2002 to 2005). Consistent with intuition, firms with a higher percentage of foreign sales are more likely to select Big N auditors. Firms with higher DA are less likely to select Big N auditors (except for 2002). Perhaps, the debt holders can monitor the management closely, which reduces the agency cost. Firms with non-expert committees are less likely to select big N auditors. Following Chaney et al. (2004), we use a cut-off level of 50 percent to assess the accuracy of our auditor selection classification. As shown in pane A, the accuracy rate of our model classification is very high (at least of 93%). Furthermore, we observe declining market shares of Big N audit firms (from 89.15% in year 2000 to 76.24% in year 2005).

Regarding the second step of the treatment effects model (audit fee

determination), panel B shows that the coefficients of the selectivity terms (lambda) are statistically significant for all the years (except for year 2002 at 10% level). As such, our results suggest that there is a selectivity bias between Big N and non-Big N auditors, and that the OLS model does not hold since it assumes the dummy variable BIG_N is an exogenous variable.[9] Note that we add a quadratic term of LOGASSET (SQ_LOGASSET) in the audit fee determination regressions.[10] As seen in Table 4, the coefficient of LOGASSET is negative but the coefficient of SQ_LOGASSET is positive. So ceteris paribus, the relation between LOGFEE and LOGASSET is a convex curve. Also, the curve is quite flat when LOGASSET is small, and LOGFEE marginally decreases when the firm size increases. The non-linear relation between LOGFEE and LOGASSET suggests that when firm size increases to a certain level, audit fees will increase more sharply. It is likely that when the firm size increases to a certain level, its complexity enlarges quickly, especially for firms with foreign operations. Consequently, it demands more audit efforts and advanced techniques.

Insert Table 4 about here

[9] Following most of the prior studies on audit fee premiums, we also ran OLS regressions with BIG_N as a dummy variable. Our results show that the coefficients of BIG_N are positive and highly significant across the six years. Furthermore, using Simon and Francis (1988)'s economic interpretation for the coefficients on BIG_N dummy, we observe a fee premium ranges from 11.8% (exp(0.112)-1) in 2000 to 67.6% (exp(0.516)-1) in 2004. Comparable to most of the prior studies on audit pricing, our model can account for more than 75% of variations in audit fees over the six years. In addition, the OLS model shows the nonlinear relation between audit fees and firm size as discussed in treatment effects model at least from 2000 to 2003.

[10] In the treatment effects model, the selectivity term (lambda) is nonlinear (see Equation (3) and (4) in Appendix B). If there is nonlinear relationship between audit fees and other independent variables and we neglect the relationship, the selectivity term is likely to pick up all the nonlinear effects in the second step regression (Maddala 1983, P. 269). Therefore, if we exclude SQ_LOGASSET in the regression, the coefficient estimates (p-values) of lambda are 0.338 (0.000), 0.310 (0.000), 0.549 (0.000), 0.516 (0.000), -0.148 (0.017), and -0.291(0.010) for 2000 to 2005, respectively. The signs of the coefficients of lambda from 2000 to 2003 are quite opposite to those in the regression results in panel B of Table 4, suggesting that there is a significant nonlinear relation between LOGFEE and LOGASSET captured by the selectivity term.

As predicted, we find that LOGFEE has positive and significant associations with RECEIVABLE, SEGMENTS, LOSS, FOREIGN_SALES, NET_LIABILITY (except for 2004), and OPINION (except for 2001), and a negative and significant association with QUICK across all six years. The magnitudes of the coefficients of ROA are too small to be designated a meaningful effect on audit fees. Furthermore, the associations between LOGFEE and ASSET_TURN, DA, INVENTORY and BUSY_SEASON are not consistently significant across years.

In the treatment effects model, we cannot simply look at the coefficient of BIG_N to infer whether there is a Big N premium or not since the audit fee premium is jointly determined by both the coefficient of BIG_N and the selectivity term. In this regard, we follow Chaney et al. (2004) to use the counterfactual estimation method (Maddala 1983) by comparing the actual audit fees paid (LOGFEE) to Big N (non-Big N) auditors and the fees they would have paid had they chosen non-Big N (Big N) auditors (LOGALT_FEE). A positive mean difference suggests that Big N (non-Big N) auditors charge higher audit fees than those charged by non-Big N (Big N) auditors if Big N (non-Big N) clients make an alternative choice of auditors.

In Table 4, panel C summarizes the counterfactual effect results. As seen in panel C, in 2000 and 2001, the mean differences between the LOGFEE and LOGALT_FEE for both Big N and non-Big N clients are negative and significant, suggesting that there are no audit fee premiums in 2000 and 2001, and that they select auditors cost-efficiently. This finding is consistent with Chaney et al. (2005) using only the year 2001 data. Furthermore, we observe a reverse trend of audit fee premiums for Big 4 clients from year 2002 to 2005, i.e., positive mean differences between LOGFEE and LOGALT_FEE. Noticeably, the signs of mean difference for non-Big N clients are negative and significant over the six years, suggesting that non-

Big N clients save money by staying with their non-Big N auditors. These results support H1.[11]

H2—Selectivity bias of Big 4 vs. second-tier auditors and second-tier vs. third-tier auditors

We further partition non-Big N auditors into second-tier (hereinafter SECOND)[12] and third-tier (hereinafter THIRD) groups and examine if there is a selectivity bias between Big N and SECOND auditors and between SECOND and THIRD auditors. We ran treatment effects models separately for Big 4 and SECOND auditor clients as well as for SECOND and THIRD auditor clients. The regression results (not tabulated) show that the coefficients (significance levels) of the selectivity term for the Big N and SECOND clients sub-sample are -0.340 (0.003), -0.513 (0.000), -0.295 (0.015), -0.260 (0.036), -0.667 (0.000), and -0.763 (0.000) for years 2000 to 2005 respectively, indicating the existence of a selectivity bias . However, we do not find selectivity bias between SECOND and THIRD auditors. Specifically, the coefficients (significance levels) of the selectivity term for the SECOND and THIRD sub-sample are -0.741 (0.352), 0.962 (0.575), -0.327 (0.639), 0.458 (0.466), -0.858 (0.177), and 0.344 (0.257) for year 2000 to 2005, respectively. Taken together, our results support H2 that there is a selectivity bias between Big N and SECOND auditors but that such selectivity bias does not exist between SECOND and THIRD auditors.

H3—Audit fee premiums between Big N and SECOND auditors and between SECOND and THIRD auditors

As seen in panel D of Table 4 for Big N and SECOND auditors, the results of

[11] We also used maximum likelihood estimation to test both audit fee premiums and auditor switching effects and we found qualitatively similar results.
[12] We further used another classification of second-tier auditors by including only Grant Thornton. Our main conclusions do not change.

the counterfactual effects estimation reveal negative mean fee differences between LOGFEE and LOGALT_FEE. All the mean differences are significant except for SECOND clients in 2000 and 2003, and Big 4 clients in 2002. Therefore, we conclude that Big N auditors did not charge audit fee premiums and that both Big N and SECOND clients select their auditors cost-efficiently or at least not cost-inefficiently. This finding is especially apparent for 2004 and 2005, i.e., after the implementation of Section 404 of SOX.

Since there is no selectivity bias between SECOND and THIRD auditors, we include a dummy variable SECOND in the OLS regressions to examine whether audit fee premiums exist between SECOND and THIRD auditors. The regression results are shown in Table 5. Our results show that the coefficients of SECOND are positive and significant across the years, indicating that SECOND auditors charge fee premiums over THIRD auditors. Also, these coefficients increase from 0.198 (in 2000) to 0.534 (in 2004), which suggests that SECOND auditors charge higher fee premiums over the years. The lower fee may partly explain why quite a number of former Big 4 clients switched to third-tier auditors.

In sum, our overall results show no audit fee premiums between Big N and second-tier auditors; however, second-tier auditors charge audit fee premiums over third-tier auditors.[13] As such, H3 is supported.

Insert Table 5 about here

4.4. Auditor Switches and Audit Fee

Table 6 presents the frequencies of auditor switching in the period of 2000 to 2005. There were noticeably few auditor switches in 2000 and 2001 (189), but quite a

[13] As predicted, our additional analysis shows the existence of audit fee premiums between Big N and third-tier auditors.

number of switches emerge in 2002 (659) and afterwards (713). Interestingly, prior to 2002, most of the auditor changes were among Big 5 auditors (68.8% in 2000 and 59.9% in 2001). By contrast, lateral switches among Big 4 auditors decrease in 2003 (31.6%), 2004 (21.2%) and 2005 (21.4%). Indeed, since 2003 there has been a clear sign of downward auditor switch (48.1% in 2003, 58.3% in 2004 and 60.5% in 2005). This is consistent with GAO (2006)'s document that many smaller public companies moved from Big 4 to non-Big 4 audit firms. Regarding the switches in 2002, the year of Andersen's dissolution, our results show that 80.4 percent of the switches are attributed to former AA clients, with a great majority of them switching to Big 4 (75.3%) and only 5.2 percent to non-Big 4.

Our results show that compared with SECOND auditors, Big N auditors serve clients of a larger size, and who have a higher ROA and a lower percentage of loss. Similarly, we find that clients of SECOND auditors are more profitable, larger, and suffer less from loss than clients of THIRD auditors. In addition, our results show that on average Big N clients making lateral switches have a higher ROA and a lower percentage of losses than their counterparts making downward switches. Also, from 2002 to 2005, firms switching upward from non-Big N to Big N auditors have a larger size and a higher ROA than their counterparts with lateral switching.

Insert Table 6 about here

H4—The overall impact of auditor switching on audit fees

As seen in panel B of Table 4, the coefficients of the dummy variable SWITCH are insignificant in year 2000 and 2001. Furthermore, while the coefficient of SWITCH is negative and significant (-0.082; $p=0.001$) in 2002, it is positive and significant in 2003 (0.195; $p<0.001$), 2004 (0.245; $p<0.001$) and 2005 (0.316;

$p<0.001$)[14]. These results suggest that in 2002, audit firms low-balled to attract new clients due to Andersen's collapse, but that they charged extra fees for clients who switched auditors after 2002. Therefore, H4 is supported.

H5: Different directions of auditor switching

We further partition the whole sample into Big N and non-Big N sub-samples to investigate the effect of the switches in different directions on audit fees. We use the same control variables that are included in the audit fee determination models.

Upward and lateral switching. Table 7, panels A and B summarize the OLS regression results for switching to Big N and non-Big N auditors. Our results show an insignificant effect of lateral switching (FROM_BIGN) on audit fees across all the years for the Big N group (except for 2004; panel A) and FROM_NON_BIGN for the non-Big N group (except for 2005; panel B). Furthermore, table 5 shows that SECOND or THIRD auditors did not charge extra fees to clients with lateral switching (SECOND_TO_SECOND or THIRD_TO_THIRD) except for THIRD_TO_THIRD in 2003. It is likely that these lateral-switching clients share similar risks with the existing clients of SECOND and THIRD auditors. Consistent with Asthana et al. (2004), we observe a negative coefficient of FROM_AA, indicating that Big 4 auditors low-balled to acquire former AA clients in 2002. Regarding the upward switching, we generally find an insignificant effect from non-Big N to Big N auditors (except for 2002: -0.553, $p<0.001$; 2005: 0.53, $p<0.044$; panel A of Table 7) and from THIRD to SECOND (Table 5).

Insert Table 7 about here

Downward switching. As shown in Panel B of Table 7, the coefficients of

[14] When including only companies with dismissal of auditors, both magnitudes and significance levels of SWITCH are reduced. But they are still positive and significant.

FROM_BIGN to non-Big N auditors are not significant in 2000 (-0.241; p=0.451) and 2001 (-0.075; p=0.408), but that they are positive and significant in 2002 (0.269; p=0.008), 2003 (0.488; p<0.0001), 2004 (0.360; p<0.0001) and 2005 (0.422; p<0.0001). This suggests that after 2001 non-Big 4 auditors charge extra fees to firms downward switching from Big 4 auditors. Recall that in the full sample, treatment effects models show that auditors charge extra fees to the switched clients from 2003 and 2005 (panel B of Table 4). However, panel A of Table 7 only shows significant coefficients of FROM_BIGN in 2004 (0.191; p<0.031) and FROM_NON_BIGN in 2005 (0.530; p<0.044). Therefore, we cannot attribute the extra fees observed in the whole sample to firms switching to Big 4 auditors but the extra fees are mainly from the downward switches from Big 4 to non-Big 4 auditors. Taken together, these results support H5.

To shed light on the auditor switching effects within non-Big N auditors, we analyze different switching patterns by SECOND and THIRD auditors. Our results in Table 5 show that firms that downward switched from Big 4 to either SECOND or THIRD audit firms paid extra fees in years 2003, 2004 and 2005. While we do not find a significant coefficient of FROM_AA (in 2002) in the overall non-Big N sample (Table 7, panel B), we observe a negative and marginally significant coefficient of AA_TO_SECOND (-0.244, p=0.099) in Table 5. This suggests that similar to Big 4 auditors, SECOND auditors also low-balled to acquire former AA clients.

One may speculate that extra fees charged to downward switching clients are due to these clients' higher risks. To explore this possible explanation, we use a factor analysis to measure the client comprehensive risk. Following Asthana et al. (2004), we include seven variables in the factor analysis: LOSS, OPINION, CA (current assets to total assets ratio), DA, STDDEV (standard deviation of daily stock returns in

a specific year), ADJ_RET (annual industry-adjusted stock return at the end of fiscal year end). NET_LIABILITY and LATE_FILE (dummy variable; equal to one if a firm registered its audited annual reports to SEC 90 days later than its fiscal year end, 0 otherwise).

Table 8 summarizes the OLS results of the risk effects on audit fees and auditor switching for the non-Big N sub-sample. The interactions between risk (RISK) and different auditor switching dummy variables are used to gauge the impact of client risk on audit fees for different types of auditor switches. If risk drives non-Big N auditors to charge extra fees, then we should observe a positive and significant coefficient of the interaction term, RISK_FROM_BIGN. As seen in Table 8, with the exception of 2004 (0.152; $p<0.051$), the coefficients of RISK_FROM_BIGN are not significant across all years. Therefore, risk can not explain extra fees charged to downward switching clients. Other possible explanations for extra audit fees charged to downward switching clients include the reduced competition of the audit market after the demise of Arthur Andersen and SOX. Schloetzer (2006) argues that Big 4 auditors reduced their output after the dissolution of Arthur Andersen and the passage of SOX. Given the increased demand for attestation services, Big 4 auditors may force out some small clients with higher risks. In this regard, these clients have to hire a non-Big 4 auditor for the attestation service, which provides non-Big 4 auditors an opportunity to increase prices for addition efforts in initial engagements. One point worth mentioning is that including RISK reduces the magnitude and significance of the coefficients of FROM_BIGN although they are still significant in 2003 and 2004. Also, as expected the coefficients of RISK are positive and significant across all years, indicating that auditors charge a risk premium to more risky clients.

5. Robustness Check

5.1. Results Sensitive to the Model Specifications

Francis and Lennox (2006) show that the Heckman model used by Chaney et al. (2004) is not only sensitive to multicollinearity, but also sensitive to minor changes in the model specification. They mainly use different proxies of client size in the four model specifications: (1) log total assets (LTA) in the selection equation and log total sales (LTS) in the audit fee equation, (2) LTS in the selection equation and LTA in the audit fee equation, (3) both LTA and LTS in the selection and audit fee equations, (4) including interaction terms between LTA and all the independent variables in both the selection equation and the audit fee equation. In turn, they argue that OLS regressions are independent of the model specification and produce consistent results of audit fee premiums.

We conduct robustness tests to check if our results are robust and not sensitive to model specifications, as pointed out by Francis and Lennox. As discussed earlier, our treatment effects models contain a non-linear term, SQ_LOGASSET. Therefore, we add SQ_LOGASSET to the first three model specifications of Francis and Lennox. In model specification 1 we reach quite the same conclusions on audit fee premiums as our main results in Section 4. In model specification 2, the mean differences between actual fees and alternative fees are negative and insignificant in 2000 but positive and significant (0.039; t-value=3.81) in 2001 for Big 5 clients. Other results remain the same as our main conclusions. In model specification 3 and 4, we get insignificant coefficients of the selectivity terms in 2002 and negative and insignificant mean differences of fees for model specification 3 in 2000 and 2001. Other results are qualitatively similar to our main conclusions. Therefore, in these two model specifications, we conclude that before 2001, both Big N and non-Big N clients

select their auditors cost-efficiently, or at least not cost-inefficiently. All in all, these results show that our main conclusions are basically robust and consistent across the different model specifications.

5.2. The Effect of Accelerated Filers on Auditor Switching Effects

In response to mounting complaints and pressure by small companies and foreign private issuers, the SEC requires that only accelerated filers (more than $75M market capitalizations; ACC_FILER), excluding registered investment companies, with fiscal year ending on or after November 15, 2004, file Section 404 reports in the first year.[15] We find a high correlation between LOGFEE and ACC_FILER (0.549 in Table 3). It is likely that accelerated filers correlate with firm size and these companies are required to have their internal control reports assessed by auditors, which apparently increases audit fees.

To examine whether the above auditor switching effects are affected by accelerated filers, we did a robustness check by adding a dummy variable ACC_FILER into treatment effects models for years 2004 and 2005. As expected, we find that coefficients of ACC_FILER are positive and significant for all the models. Also, our results show that after adding the variable of ACC_FILER, the signs and significances of other variables (except for LOGASSET and SQ_LOGASSET) remain the same. Since our robustness check shows that adding ACC_FILER does not change the auditor switching effects in all the models, to avoid multicollinearity problems caused by the high correlation between LOGASSET and ACC_FILER (the correlation coefficient is 0.610), we do not include this variable in our formal models.

[15] Foreign private issuers received a one-year extension until the first fiscal year ending on or after July 15, 2006, to comply with the regulation. Due to the complexity and substantial compliance costs associated with implementation, in September 2005 the SEC further extended the compliance date for non-accelerated filers until 2007.

5.3. The Effect of Combined Duplicate Fees

In the formal model, we included derived audit fees (see Appendix C for details) in the year of auditor switching. To ascertain that our main results are not sensitive to the proxy for audit fees, we also use the combined fees (i.e., adding the reported fees by both departed and engaged auditors) to rerun our models. Our robustness tests show qualitatively similar results on auditor selection and audit fee premiums. However, some differences exist in the auditor switching effects. Specifically, our results show a weaker overall impact of auditor switching on audit fees in 2003. Although their magnitudes and significance levels decrease, the conclusion of extra fees charged to downward switching clients by non-Big N auditors in years 2003, 2004 and 2005 still maintains. Also, in the sub-sample of non-Big N auditors we find that while the magnitude and significance level of THIRD_TO_SECOND decrease in 2003, those of SECOND_TO_THIRD increase in 2003 and 2004. Taken together, our main results hold when we use combined audit fees as a proxy.

6. Discussion and Conclusions

In light of the considerable changes affecting the competition structure of the U.S. audit market, this study employs the treatment effects model to examine the audit fee premium issues and also investigates audit pricing related to auditor switches in the timeframe between 2000 and 2004. Our results show a selectivity bias between Big N and non-Big N auditors across the six years. After correcting the selectivity bias and using the counterfactual estimation, we find that there is no Big 5 audit fee premium in 2000 and 2001 and that both Big 5 clients and non-Big 5 clients choose their auditors cost-efficiently, or at least not inefficiently. This demonstrates that when companies choose auditors, they consider fee structures of audit firms and their

own firm-specific characteristics. As predicted, we observe the presence of Big 4 audit fee premiums after the demise of Andersen and the enactment of SOX. However, non-Big 4 clients still make a cost-efficiency decision by staying with their auditors.

Our study also further classifies non-Big 4 audit firms into second and third tiers to examine audit fee premiums and the effect of auditor switches. Although the second-tier auditors have a national reputation with high quality of attestation service, they still do not have the same reputation as Big 4 auditors. This is evidenced in the selectivity bias between Big N and the second-tier auditors. Nonetheless, our results show a lack of Big N audit fee premiums over second-tier auditors. Despite the apparent divergence between the second- and third-tier auditors, we do not find a selectivity bias between them but observe that second-tier auditors charge audit fee premiums over third-tier auditors. In general, companies select auditors based on their own characteristics, an acceptable level of service quality, audit fees and other factors. Our results show that client firms do not distinguish between second- and third-tier audit firms in selecting their auditors. However, second-tier audit firms charge rates similar to those of Big N auditors but higher than those of third-tier auditors. This demonstrates a perception gap between client firms and second-tier audit firms.

Regarding auditor switching, we find that prior to 2002, most of the Big 4 clients change auditors laterally; however, they mainly switch downward to non-Big 4 auditors afterwards. The downward switching may be either because of client firms' high risks (Landsman et al. 2006, Schloetzer 2006) or because of their desire to seek lower audit fees (GAO 2006). We find that non-Big 4 auditors charge extra fees to clients that downward switched from Big 4 in 2003, 2004, and 2005. Nonetheless,

market shares of non-Big 4 auditors have increased significantly over the past six years (from 10.85% in 2000 to 23.76% in 2005). Our additional analysis supports the argument that higher audit fee increases are for riskier clients; however, risk can only partly explain higher fees charged to downward switching clients in 2004. It is likely that in the less competitive environment, non-Big 4 auditors have a stronger negotiation power and are able to charge additional initial audit efforts to downward switching clients. Also, we find that in 2002 the audit market was in the process of reshuffling, and both Big 4 and second-tier auditors low-balled to attract former Andersen and other clients.

To assure the robustness of our results, we conducted several checks. Our robustness checks show that our models do not suffer from the multicollinearity and sensitivity to minor changes in the four model specifications pointed out by Francis and Lennox (2006). In addition, our results remain unchanged when we include a variable of accelerated filers in year 2004, use alternative combined audit fees or include only Grant Thornton in the second-tier audit firm.

It is noteworthy to mention the limitation of this study in interpreting our findings. First, this study mainly focuses on the costs side of audit services, i.e., the cost efficiency of auditor selection. Hence, we do not incorporate the benefits (e.g., reputation, reduction of agency costs) that may be brought by Big N auditors into our model. Without a doubt, auditor reputation is an important factor when firms make auditor selection decisions. Second, our study does not distinguish whether the audit fee premiums following the demise of Andersen and the enactment of SOX are attributable to monopoly power or to product differentiation of Big 4 auditors. Future research should explore the effects of auditor reputation and monopoly power or product differentiation of Big 4 auditors on audit fee premiums and clients' auditor

switching decisions. Also, more studies are needed to further investigate the audit pricing decision by second- and third-tier audit firms to the departed Big 4 clients. In light of mounting complaints about high compliance costs under Section 404 of SOX, future studies should also examine the audit fee determinants for clients with different risks and different structures of corporate governance.

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Appendix A Variable Definitions

FEE	Audit fees a company pays to its auditor
LOGFEE	Natural logarithm of audit fees
ASSET	Total assets at a fiscal year end
LOGASSET	Natural logarithm of total assets
SQ_LOGASSET	The square of LOGASSET
ASSET_TURN	Asset turnover; sales divided by total assets
ROA	Return on assets
DA	Long-term debts to total assets ratio
QUICK	Quick ratio
INVENTORY	Inventory to total assets ratio
RECEIVABLE	Receivables to total assets ratio
SEGMENTS	The number of industry segments of a firm
LOSS	1 if net income before extraordinary items is less than zero, and 0 otherwise
FOREIGN_SALES	Foreign sales as a percentage of total sales
NET_LIABILITY	1 if a company's total liabilities are bigger than its total assets, and 0 otherwise
OPINION	1 if a company receives a qualified audit opinion, and 0 otherwise
BUSY_SEASON	1 if a company's fiscal year end falls between December 1st and March 31st, which is the normal busy season for auditors, and 0 otherwise
NO_EXPERTISE	1 if a company's audit committee has no financial expert, and 0 otherwise
SWITCH	1 if a firm changes its auditor in a year, and 0 otherwise
ACC_FILER	Accelerated filer, 1 if a firm's market value is greater than $75 million, and 0 otherwise
BIG_N	1 if a firm's auditor is one of Big N auditors, 0 otherwise
FROM_BIGN	1 if the departed auditor is a Big N auditor in auditor switching, and 0 otherwise
FROM_NON_BIGN	1 if the departed auditor is a non-Big N auditor in auditor switching, and 0 otherwise
FROM_AA	1 if the departed auditor was Arthur Andersen in 2002, and 0 otherwise
SECOND	1 if a firm's auditor is either Grant Thornton or BDO Siedman, and 0 otherwise
BIGN_TO_SECOND	1 if a firm switches from a Big N auditor to either Grant Thornton or BDO Siedman, and 0 otherwise
BIGN_TO_THIRD	1 if a firm switches from a Big N auditor to a non-Big N auditor other than Grant Thornton or BDO, and 0 otherwise
SECOND_TO_THIRD	1 if a firm switches from either Grant Thornton or BDO to other non-Big N auditors, and 0 otherwise
THIRD_TO_SECOND	1 if a firm switches from a non-Big N auditor other than Grant Thornton or BDO to either Grant Thornton or BDO, and 0 otherwise
THIRD_TO_THIRD	1 if a firm switches among non-Big N auditors other than Grant Thornton or BDO, and 0 otherwise
AA_TO_SECOND	1 if a firm switches from Arthur Andersen to either Grant Thornton or BDO, and 0 otherwise
AA_TO_THIRD	1 if a firm switches from Arthur Andersen to a non-Big N auditor other than Grant Thornton or BDO, and 0 otherwise

Appendix B

Treatment Effects Model

To explore audit fee premiums, the traditional OLS model includes a dummy variable BIG_N

$$y_i = x_i\beta + \delta BIG\_N + v_i \quad (1)$$

and a selection model

$$y^* = z_i\gamma + \varepsilon_i \quad (2)$$

Where BIG_N =1 if y^*>0, and 0 otherwise.

We assume that v_i and ε_i are normally distributed. Combining the two equations and taking the expectation of equation (1) conditional on all independent variables and y^*, we will find that for the Big N group,

$$E[y_i \mid BIG\_N_i = 1, x_i, z_i] = x_i\beta + \delta + E[vi \mid z_i\gamma + \varepsilon_i > 0]$$

$$= x_i\beta + \delta + \rho\sigma_v \frac{\phi(z_i\gamma)}{\Phi(z_i\gamma)} \quad (3)$$

and for the non-Big N group,

$$E[y_i \mid BIG\_N_i = 0, x_i, z_i] = x_i\beta + \rho\sigma_v \frac{-\phi(z_i\gamma)}{1-\Phi(z_i\gamma)}. \quad (4)$$

Where $\frac{\phi(z_i\gamma)}{\Phi(z_i\gamma)}$ and $\frac{-\phi(z_i\gamma)}{1-\Phi(z_i\gamma)}$ are the selectivity terms for the Big N and non-Big N groups, respectively. Equation (3) and (4) illustrate how to run the two-step regression of the treatment effects model. In details, we run a probit regression of the auditor selection equation to get the estimates and calculate the selectivity terms to be included in the second step. Then we run the OLS regression by including a selectivity term (lambda) in the model to correct the selectivity bias in the audit fee determination model.

The difference in the expected audit fees between Big N and non-Big N firms is

$$E[y_i \mid BIG\_N_i = 1, x_i, z_i] - E[y_i \mid BIG\_N_i = 0, x_i, z_i] =$$

$$\delta + \rho\sigma_v \frac{\phi(z_i\gamma)}{\Phi(z_i\gamma)(1-\Phi(z_i\gamma))} \qquad (5)$$

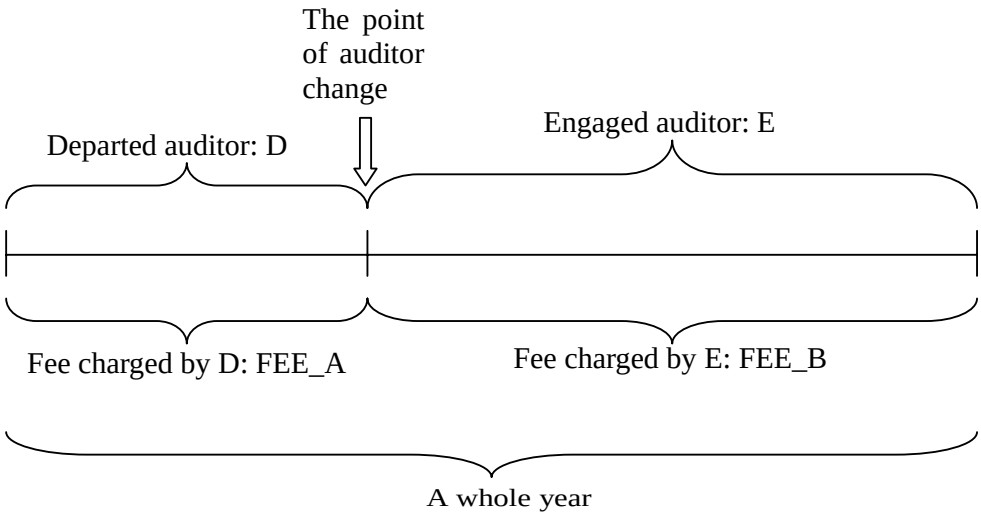
As seen in equation (5), the audit fee difference between Big N and non-Big N firms is not only decided by the coefficient of the dummy variable BIG_N, but also by the selectivity term and its coefficient.

Also from equation (3) and (4), if the error term ε in the selection model is independent of the error term in the audit fee regression equation, then the selectivity term will be zero and the estimated β will be unbiased. In this regard, we can conclude that the client firms are randomly assigned to audit firms, and the traditional OLS method is proper to examine Big N audit fee premium. However, if the error term ε in the selection model is correlated to the error term in the audit fee regression equation, there is a selectivity bias.

Appendix C

Duplicate Audit Fees in the Year of Auditor Switching

When a firm changes its auditor in the middle of a year, part of the audit work is performed by the departed auditor, and the rest is conducted by the engaged auditor. Often, these two auditors charge different rates, particularly when a firm is switching auditor upward or downward to another tier. The problem of audit fee duplication is depicted as follows.



The problem is intrinsic when we conduct an auditor switching analysis because neither FEE_A nor FEE_B represents the true audit fee, since it only reflects a proportion of the audit work. If we ignore one audit fee, the true audit fees for that year of auditor switching will be biased downward, which will result in a misleading conclusion that the engaged auditor low-balls its audit service. Also, we cannot simply add FEE_A and FEE_B to derive total audit fee, since it may either overestimate or underestimate the audit fees the engaged auditor should have charged and we also reach a wrong conclusion. For instance, assume D is a Big N auditor and E is a non-Big N auditor, and if Big N auditors charge audit fee premium over non-Big N auditors. In this case, adding the two audit fees together may overestimate the

audit fees charged by auditor E, leading us to make a conclusion that the engaged non-Big N auditor charges start-costs for the initial engagement. Conversely, if the firm switches from a non-Big N auditor to a Big-N auditor, adding these two fees may underestimate the fees charged by the Big N auditor, leading to the wrong conclusion that Big N auditors low-ball to attract non-Big N clients. Prior studies either ignored or did not explicitly mention how they deal with the duplicate audit fees problem.

As such, the key issue is how to better estimate the audit fee that should have been charged by the engaged audit firm had it done the entire audit work. Clearly, audit work is not performed evenly throughout the 12 months. As such, we cannot use the number of months as a proxy for the proportion of the audit work conducted by auditor E. In this study, we use a different method of calculating audit fees of the engaged auditor in the year that a firm makes an auditor switch. Specifically, we estimate these two audit fees based on an inferred proportion of the audit work performed by auditors D and E, individually. Specifically, we use the ratio of the actual audit fees charged by auditor D and the fees auditor D should have charged if it performed the entire audit work. We make an assumption that the same types of auditors (Big N or non-Big N) have the same pricing standards in the same year. We develop the following audit fee determination model by using the sample of clients without changing auditors in the same group (Big N or non-Big N) of the departed auditor:

$$Logaudfees = X\beta + \varepsilon$$

In this model X is the same set of variables as in our OLS regression. We use the model to predict the audit fees (FEE_C) that auditor D would have charged if it had implemented the audit work for the entire year. Therefore, we infer that auditor D did a FEE_A/ FEE_C portion of the total audit work for that year. This allows us to

infer that the engaged auditor E did the specific remaining proportion (1- FEE_A/ FEE_C) of the work and should have charged (FEE_B/(1- FEE_A/ FEE_C) accordingly. Therefore, we use FEE_B/(1- FEE_A/ FEE_C) as fees charged by auditor E in all the analyses.

Table 1
Sample Selection Criteria

(2000-2005)

Total observations from Audit Analytics	68,790
Less:	
Observations without matching firms in Compustat and CRSP	(27,684)
Financial firms	(7,627)
Subsidiaries	(743)
Observations with missing values in financial information in Compustat	(7,726)
Duplicated observations in audit fees	(1,385)
Observations with missing values in CRSP	(6,805)
Final Sample	17,820

Table 2
Descriptive Statistics of the Sample

	Whole sample		Big N		Non-Big N		
No. of obs	17,820		14,876		2,944		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	t-value
FEE[a]	1.112	3.134	1.267	3.225	0.329	2.480	17.77
LOGFEE	12.899	1.312	13.103	1.267	11.868	1.015	57.73
ASSET[a]	2406.2	9255.4	2852.600	10067.0	150.7	556.2	32.48
LOGASSET	19.420	2.096	19.813	1.971	17.433	1.493	74.59
ASSET_TURN	1.072	0.894	1.047	0.889	1.195	0.912	-8.08
ROA	-25.491	2033.0	-7.695	45.2	-115.400	5000.6	1.17
DA	0.165	0.217	0.173	0.210	0.127	0.246	9.35
QUICK	2.351	3.361	2.360	3.357	2.303	3.384	0.84
INVENTORY	0.113	0.134	0.108	0.129	0.140	0.158	-10.46
RECEIVABLE	0.146	0.114	0.141	0.110	0.173	0.129	-12.61
SEGMENTS	2.150	1.494	2.212	1.534	1.840	1.226	14.38
LOSS	0.382	0.486	0.358	0.479	0.506	0.500	-14.82
FOREIGN_SALES	0.352	0.478	0.378	0.485	0.223	0.416	18.02
NET_LIABILITY	0.036	0.187	0.034	0.180	0.051	0.219	-3.98
OPINION	0.343	0.475	0.361	0.480	0.250	0.433	12.48
BUSY_SEASON	0.790	0.407	0.799	0.401	0.747	0.435	5.97
NO_EXPERTISE[b]	0.107	0.310	0.095	0.293	0.175	0.380	-9.71
SWITCH	0.088	0.283	0.060	0.237	0.232	0.422	-21.48
ACC_FILER[c]	0.788	0.409	0.890	0.312	0.422	0.494	21.49

[a] Fees and asset are in million dollars.
[b]NO_EXPERTISE excludes year 2005 because it is not available in Audit Analysis in 2005. There are 15,336 observations from 2000 to 2004, where 12,955 for the Big N group, 2,381 for the non-Big N group
[c]The statistic of ACC_FILER is only for year 2004 and 2005. And there are 6,344 observations, where 4,954 for the Big N group, 1,390 for thenon-Big N group.

Table 3
Pearson Correlations

		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	ACC_FILER[a]
LOGFEE	A	0.799	0.350	-0.032	0.018	0.190	-0.216	-0.077	-0.017	0.381	-0.226	0.322	0.013	0.181	0.077	-0.110	-0.089	0.549
LOGASSET	B		0.422	-0.079	0.053	0.256	-0.178	-0.094	-0.144	0.382	-0.360	0.214	-0.071	0.158	0.079	-0.128	-0.122	0.610
BIG_N	C			-0.061	0.020	0.078	0.006	-0.090	-0.104	0.092	-0.113	0.121	-0.034	0.087	0.047	-0.093	-0.226	0.474
ASSET_TURN	D				0.012	-0.057	-0.280	0.418	0.500	0.005	-0.175	-0.122	0.026	-0.016	-0.075	-0.009	0.025	-0.134
ROA	E					0.004	0.005	0.009	0.012	0.009	-0.020	0.007	-0.045	-0.012	-0.004	-0.026	-0.025	0.255
DA	F						-0.189	-0.078	-0.126	0.116	0.002	-0.054	0.411	0.128	0.085	-0.001	-0.009	0.105
QUCIK	G							-0.208	-0.192	-0.186	0.171	-0.020	-0.077	-0.128	-0.005	-0.006	-0.015	0.020
INVENTORY	H								0.181	-0.014	-0.119	-0.010	-0.046	-0.032	-0.083	0.006	0.011	-0.149
RECEIVABLE	I									0.076	-0.125	0.110	-0.002	-0.037	-0.100	0.009	0.026	-0.170
SEGMENTS	J										-0.178	0.095	-0.034	0.111	-0.004	-0.036	-0.026	0.141
LOSS	K											-0.026	0.165	0.035	0.027	0.071	0.042	-0.304
FOREIGN_SALES	L												-0.014	0.026	-0.014	-0.025	-0.040	0.138
NET_LIABILITY	M													0.098	0.048	0.038	0.031	-0.072
OPINION	N														0.046	0.000	0.038	0.037
BUSY_SEASON	O															-0.012	-0.005	0.086
NO_EXPERTISE	P																0.016	-0.121
SWITCH	Q																	-0.178

[a] The correlation coefficients between ACC_FILER and other variables are only for year 2004 and 2005.

Table 4
Treatment Effects Model of the Determination of Audit Fees

Panel A Step 1: Auditor selection

The Probit Model:

$$BIG\_N = \gamma_0 + \gamma_1 LOGASSET + \gamma_2 ASSET\_TURN + \gamma_3 ROA + \gamma_4 DA + \gamma_5 QUICK + \gamma_6 INVENTORY + \gamma_7 RECEIVABLE + \gamma_8 NO\_EXPERTISE + \gamma_9 SEGMENTS + \gamma_{10} LOSS + \gamma_{11} FOREIGN\_SALES + \gamma_{12} NET\_LIABILITY + \gamma_{13} OPINION + \varepsilon$$

		Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Exp. Sign	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
LOGASSET	+	0.444	0.000	0.468	0.000	0.453	0.000	0.470	0.000	0.558	0.000	0.607	0.000
ASSET_TURN	+	0.066	0.268	0.021	0.609	0.065	0.178	0.094	0.075	0.071	0.151	0.086	0.076
ROA	?	-0.004	0.004	-0.001	0.074	-0.001	0.037	0.000	0.744	-0.001	0.037	-0.005	0.000
DA	?	-0.371	0.071	-0.600	0.002	-0.257	0.151	-0.482	0.006	-0.496	0.004	-0.520	0.005
QUICK	?	0.010	0.446	0.019	0.113	0.055	0.000	0.037	0.001	0.022	0.016	0.035	0.001
INVENTORY	+	-0.784	0.005	-0.560	0.020	-0.338	0.148	-0.709	0.004	-0.771	0.001	-0.574	0.022
RECEIVABLE	+	-0.605	0.109	-0.503	0.121	-0.293	0.351	-0.635	0.052	-0.853	0.006	-0.805	0.011
NO_EXPERTISE	?	-0.135	0.227	-0.135	0.168	-0.156	0.090	-0.188	0.051	-0.084	0.398		
SEGMENTS	+	-0.061	0.081	-0.078	0.008	-0.093	0.000	-0.064	0.015	-0.050	0.037	-0.070	0.004
LOSS	-	-0.008	0.938	0.163	0.039	0.179	0.016	0.075	0.293	0.133	0.064	-0.026	0.724
FOREIGN_SALES	+	0.191	0.067	0.336	0.000	0.197	0.009	0.166	0.022	0.099	0.143	0.160	0.019
NET_LIABILITY	?	0.206	0.467	0.301	0.131	0.129	0.491	0.376	0.056	0.147	0.449	0.025	0.888
OPINION	?	-0.011	0.928	0.233	0.018	0.248	0.000	0.234	0.000	0.038	0.604	-0.118	0.157
INTERCEPT		-6.741	0.000	-7.272	0.000	-7.423	0.000	-7.731	0.000	-9.494	0.000	-10.637	0.000
% Correctly Classified		99.10		98.73		97.86		96.66		94.73		93.35	
% Selecting Big N		89.15		88.03		85.71		84.04		79.79		76.24	

Table 4
(Continued)

Panel B Step 2: Audit fee determination

The OLS Model:

$$LOGFEE = \beta_0 + \beta_1 LOGASSET + \beta_2 SQ\_LOGASSET + \beta_3 ASSET\_TURN + \beta_4 ROA + \beta_5 DA + \beta_6 QUICK + \beta_7 INVENTORY + \beta_8 RECEIVABLE + \beta_9 BUSY\_SEASON + \beta_{10} SEGMENTS + \beta_{11} LOSS + \beta_{12} FOREIGN\_SALES + \beta_{13} NET\_LIABILITY + \beta_{14} OPINION + \beta_{15} SWITCH + \beta_{16} BIG\_N + \beta_{17} LAMBDA + v$$

		Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Exp. Sign	Coeff.	p-value	Coefficient	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT		14.361	0.000	16.412	0.000	14.312	0.000	15.536	0.000	13.364	0.000	11.652	0.000
LOGASSET	?	-0.736	0.000	-0.935	0.000	-0.713	0.000	-0.821	0.000	-0.583	0.001	-0.343	0.050
SQ_LOGASSET	?	0.029	0.000	0.034	0.000	0.029	0.000	0.031	0.000	0.024	0.000	0.018	0.000
ASSET_TURN	+	0.004	0.772	0.008	0.511	0.034	0.043	0.024	0.203	0.045	0.044	0.051	0.020
ROA	-	-0.002	0.000	0.000	0.001	-0.001	0.000	0.000	0.034	-0.001	0.000	-0.001	0.102
DA	?	-0.087	0.184	-0.041	0.490	-0.061	0.311	0.017	0.757	0.079	0.332	-0.153	0.060
QUICK	-	-0.022	0.000	-0.027	0.000	-0.027	0.000	-0.021	0.000	-0.019	0.000	-0.023	0.000
INVENTORY	+	0.349	0.000	0.203	0.013	0.050	0.571	-0.025	0.810	0.219	0.078	-0.114	0.349
RECEIVABLE	+	1.090	0.000	1.104	0.000	1.021	0.000	1.093	0.000	1.121	0.000	1.019	0.000
BUSY_SEASON	+	-0.017	0.658	0.066	0.003	0.067	0.007	0.026	0.318	0.327	0.000	-0.045	0.106
SEGMENTS	+	0.063	0.000	0.066	0.000	0.068	0.000	0.069	0.000	0.067	0.000	0.076	0.000
LOSS	+	0.089	0.003	0.156	0.000	0.222	0.000	0.277	0.000	0.205	0.000	0.206	0.000
FOREIGN_SALES	+	0.375	0.000	0.359	0.000	0.293	0.000	0.322	0.000	0.310	0.000	0.328	0.000
NET_LIABILITY	+	0.355	0.000	0.207	0.001	0.247	0.000	0.221	0.001	0.107	0.238	0.274	0.001
OPINION	+	0.115	0.001	0.009	0.726	0.138	0.000	0.115	0.000	0.117	0.000	0.126	0.000
SWITCH	?	-0.041	0.654	-0.016	0.694	-0.082	0.001	0.195	0.000	0.245	0.000	0.316	0.000
BIG_N	?	0.731	0.000	0.977	0.000	0.552	0.001	0.740	0.000	1.699	0.000	1.564	0.000
LAMBDA	**?**	-0.342	0.001	-0.441	0.000	-0.152	0.094	-0.252	0.007	-0.681	0.000	-0.639	0.000

Table 4
(continued)

Panel C: Counterfactual effects between Big N and non-Big N clients

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value
E (LOGFEE-LOGALT_FEE) for Big N clients	-.0619	-4.82	-.055	-4.90	.205	18.77	.165	4.45	.161	10.52	.151	10.12
E (LOGFEE-LOGALT_FEE) for non-Big N clients	-.118	-3.48	-.199	-6.90	-.287	-9.84	-.301	-9.10	-.525	-18.81	-.459	-17.46

Panel D: Counterfactual effects between Big N and SECOND clients

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value	Mean Diff.	t-value
E (LOGFEE-LOGALT_FEE) for Big N clients	-.149	-11.64	-.168	-15.09	-.010	-0.87	-.070	-6.17	-.100	-6.95	-.051	-3.66
E (LOGFEE-LOGALT_FEE) for SECOND clients	-.035	-0.72	-.087	-2.21	-.154	-3.56	-.067	-1.36	-.232	-5.77	-.211	-5.04

.

Table 5
Regression of Audit Fees of the Two-tier non-Big N Auditors and Auditor Switching Effects

Dependent Variable: LOGFEE

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	9.491	0.019	9.451	0.002	15.385	<.0001	18.609	<.0001	16.061	<.0001	7.825	0.012
LOGASSET	-0.219	0.623	-0.232	0.496	-0.853	0.004	-1.184	0.001	-0.968	0.005	-0.063	0.855
SQ_LOGASSET	0.017	0.162	0.019	0.052	0.035	<.0001	0.043	<.0001	0.039	<.0001	0.016	0.097
ASSET_TURN	0.046	0.364	0.038	0.275	0.072	0.061	-0.003	0.949	0.081	0.045	0.089	0.012
ROA	-0.004	0.001	0.000	0.826	0.000	0.310	0.000	0.114	-0.001	0.012	-0.002	0.022
DA	-0.057	0.781	-0.190	0.082	0.126	0.398	-0.110	0.276	-0.107	0.468	-0.340	0.011
QUICK	-0.002	0.812	-0.018	0.026	-0.022	0.069	-0.021	0.035	-0.009	0.228	-0.017	0.050
INVENTORY	-0.143	0.525	-0.337	0.054	-0.242	0.208	0.200	0.387	-0.103	0.589	-0.334	0.066
RECEIVABLE	0.810	0.006	0.609	0.011	0.631	0.021	0.420	0.179	0.604	0.017	0.180	0.450
SEGMENTS	0.059	0.049	0.022	0.369	0.042	0.102	0.037	0.168	0.019	0.383	0.011	0.569
LOSS	0.056	0.505	0.268	<.0001	0.254	0.000	0.160	0.024	0.322	<.0001	0.267	<.0001
FOREIGN_SALES	0.337	0.000	0.209	0.007	0.127	0.083	0.153	0.052	0.303	<.0001	0.286	<.0001
NET_LIABILITY	0.164	0.473	0.490	0.001	0.089	0.563	0.269	0.106	0.093	0.555	0.344	0.011
OPINION	-0.083	0.405	0.146	0.071	0.125	0.048	0.106	0.129	0.147	0.030	0.127	0.065
BUSY_SEASON	-0.002	0.987	0.029	0.627	-0.046	0.498	0.055	0.455	0.109	0.086	0.087	0.142
SECOND	0.198	0.007	0.241	<.0001	0.282	<.0001	0.360	<.0001	0.534	<.0001	0.512	<.0001
BIGN_TO_ SECOND			-0.048	0.704	0.226	0.107	0.437	0.000	0.193	0.032	0.377	<.0001
BIGN_TO_THIRD	-0.119	0.711	-0.144	0.250	0.225	0.114	0.502	<.0001	0.441	<.0001	0.461	<.0001
SECOND_TO_THIRD	-0.086	0.821	0.317	0.134	0.346	0.144	0.346	0.136	0.365	0.027	0.810	<.0001
THIRD_TO_SECOND			0.295	0.310	-0.014	0.965	0.380	0.361	0.546	0.170	-0.486	0.466
SECOND_TO_SECOND			-0.167	0.566							0.480	0.470
THIRD_TO_THIRD	0.270	0.470	0.050	0.920	-0.056	0.721	-0.413	0.022	0.035	0.813	0.205	0.232
AA_TO_SECOND					-0.244	0.099						
AA_TO_THIRD					0.279	0.100						
No. of OBS	230		344		468		512		669		722	
Adj R^2	0.5920		0.6225		0.5160		0.4717		0.5664		0.6070	

Table 6
Descriptive Statistics of Auditor Switching

	Year 2000				Year 2001				Year 2002				Year 2003				Year 2004				Year 2005			
Sub-Sample	NO. of OBS	ASSET	ROA	LOSS	NO. Of OBS	ASSET	ROA	LOSS	NO. Of OBS	ASSET	ROA	LOSS	NO. of OBS	ASSET	ROA[a]	LOSS	NO. of OBS	ASSET	ROA	LOSS	NO. of OBS	ASSET	ROA	LOSS
Overall BIGN Group	1890	2026.7	-7.62	0.35	2529	1984.2	-17.30	0.46	2807	2725.4	-11.35	0.42	2696	3099.8	-5.16	0.35	2637	3565.2	-1.86	0.28	2317	3529.5	-2.44	0.28
Switch to BIGN	25				107				552				77				65				57			
From BIGN	22	2080.3	-3.23	0.36	94	1276.2	-12.27	0.52	44	1232.4	-12.86	0.39	65	1680.6	-1.97	0.32	56	3283.9	0.05	0.29	52	1574.8	0.43	0.31
From AA									496	2051.3	-7.01	0.34												
From NONBIGN	3	31.3	-24.72	0.67	13	110.8	-68.71	0.69	12	237.5	1.19	0.33	12	373.6	5.65	0.08	9	335.7	-1.40	0.33	5	971.7	-9.05	0.40
SECOND	1	33.0	9.60	0.00	4	59.8	-165.52	0.75	4	50.9	-7.07	0.50	3	179.8	12.87	0.00	3	214.5	-4.30	0.33	3	1088.7	-3.81	0.33
THIRD	2	30.5	-41.88	1.00	9	133.4	-25.68	0.67	8	330.8	5.32	0.25	9	438.1	3.25	0.11	6	396.4	0.05	0.33	2	796.3	-16.92	0.50
Overall NONBIGN Group	230	143.3	-15.14	0.49	344	116.6	-37.31	0.54	468	164.7	-33.05	0.53	511	146.4	-24.86	0.54	668	147.3	-18.95	0.47	722	166.7	-15.69	0.49
SECOND	116	188.6	-18.02	0.50	163	159.8	-32.77	0.55	190	157.2	-29.66	0.53	211	182.8	-18.84	0.55	277	196.7	-16.81	0.47	274	243.4	-9.30	0.45
THIRD	114	97.3	-12.22	0.47	181	77.7	-41.39	0.53	278	169.8	-35.37	0.53	300	120.8	-29.09	0.54	391	112.3	-20.48	0.48	448	119.8	-19.61	0.51
Switch to NONBIGN	7				50				107				129				199				186			
To SECOND	0				25				47				51				86				66			
From BIGN	0				19	59.4	-103.75	0.53	23	36.2	-25.69	0.52	48	124.6	-15.21	0.58	83	166.9	-7.73	0.42	64	236.6	-3.09	0.39
From AA									20	53.7	-42.16	0.65												
From SECOND	0				3	8.7	-24.17	1.00	0				0				0				1	86.8	5.58	0.00
From THIRD	0				3	48.6	5.46	0.33	4	70.7	-2.09	0.50	3	19.4	-104.9	0.67	3	287.8	-4.92	0.67	1	40.0	6.11	0.00
To THIRD	7				25				60				78				113				120			
From BIGN	3	56.9	-108.17	1.00	18	32.9	-31.20	0.67	22	20.1	-140.03	0.73	51	35.6	-74.34	0.71	71	49.0	-21.87	0.55	83	91.1	-18.16	0.59
From AA									14	33.9	-49.04	0.57												
From SECOND	2	9.1	-105.72	1.00	6	18.7	-46.34	0.67	7	35.3	-4.25	0.29	10	25.2	-38.43	0.70	19	58.6	-36.08	0.68	21	54.5	-49.61	0.67
From THIRD	2	28.4	0.51	0.50	1	12.2	-47.08	1.00	17	25.7	-51.56	0.71	17	56.4	-6.36	0.53	23	48.3	-18.48	0.43	16	41.4	-2.82	0.56

[a] An outlier of ROA in the non-Big N sample were deleted in 2003

Table 7
OLS Regression of Auditor Switching

Dependent Variable: LOGFEE

Panel A Switching to BIG N auditors

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	12.372	<.0001	14.658	<.0001	13.450	<.0001	12.871	<.0001	2.303	0.056	5.085	<.0001
LOGASSET	-0.493	<.0001	-0.705	<.0001	-0.594	<.0001	-0.517	<.0001	0.565	<.0001	0.349	0.003
SQ_LOGASSET	0.024	<.0001	0.029	<.0001	0.027	<.0001	0.025	<.0001	-0.002	0.482	0.003	0.264
ASSET_TURN	0.006	0.702	0.013	0.234	0.026	0.153	0.046	0.018	0.060	0.006	0.063	0.004
ROA	-0.003	<.0001	-0.001	<.0001	-0.002	<.0001	-0.001	0.018	-0.004	<.0001	-0.003	<.0001
DA	-0.132	0.039	-0.090	0.120	-0.101	0.110	0.062	0.342	-0.060	0.435	-0.160	0.040
QUICK	-0.022	<.0001	-0.025	<.0001	-0.025	<.0001	-0.015	0.000	-0.012	0.014	-0.010	0.025
INVENTORY	0.319	0.001	0.220	0.007	0.114	0.240	-0.211	0.047	0.018	0.882	-0.172	0.157
RECEIVABLE	1.059	<.0001	1.065	<.0001	1.111	<.0001	1.208	<.0001	0.978	<.0001	1.026	<.0001
SEGMENTS	0.058	<.0001	0.061	<.0001	0.066	<.0001	0.070	<.0001	0.068	<.0001	0.073	<.0001
LOSS	0.091	0.003	0.145	<.0001	0.202	<.0001	0.269	<.0001	0.154	<.0001	0.150	<.0001
FOREIGN_SALES	0.394	<.0001	0.407	<.0001	0.317	<.0001	0.363	<.0001	0.339	<.0001	0.369	<.0001
NET_LIABILITY	0.411	<.0001	0.233	<.0001	0.281	<.0001	0.161	0.029	0.165	0.063	0.230	0.003
OPINION	0.143	<.0001	0.027	0.280	0.147	<.0001	0.118	<.0001	0.112	<.0001	0.091	0.004
BUSY_SEASON	-0.020	0.641	0.077	0.001	0.093	0.001	0.034	0.214	0.400	<.0001	-0.085	0.007
FROM_BIGN	-0.047	0.675	-0.030	0.569	0.070	0.422	0.024	0.737	0.191	0.031	0.015	0.851
FROM_NON_BIGN	-0.064	0.833	-0.034	0.809	-0.553	0.001	0.033	0.842	0.116	0.595	0.530	0.044
FROM_AA					-0.112	<.0001						
No. of OBS	1890		2529		2807		2696		2637		2317	
Adj R^2	0.7609		0.7761		0.7661		0.7638		0.7063		0.7321	

Table 7
(Continued)

Panel B Switching to non-Big N auditors

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Coeff.	p-value	Coeff.	P-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	8.593	0.036	7.822	0.011	13.210	<.0001	16.900	<.0001	13.484	<.0001	5.674	0.084
LOGASSET	-0.126	0.781	-0.062	0.857	-0.620	0.033	-1.007	0.004	-0.711	0.050	0.133	0.713
SQ_LOGASSET	0.015	0.227	0.014	0.133	0.029	0.001	0.039	<.0001	0.033	0.001	0.012	0.225
ASSET_TURN	0.049	0.340	0.032	0.351	0.079	0.043	0.017	0.739	0.091	0.032	0.095	0.010
ROA	-0.004	0.000	0.000	0.873	0.001	0.181	0.000	0.186	-0.001	0.003	-0.002	0.003
DA	-0.119	0.566	-0.203	0.067	0.150	0.321	-0.126	0.229	-0.180	0.241	-0.390	0.006
QUICK	-0.004	0.673	-0.019	0.023	-0.019	0.125	-0.021	0.039	-0.008	0.276	-0.020	0.029
INVENTORY	-0.081	0.720	-0.282	0.108	-0.115	0.550	0.201	0.399	-0.074	0.713	-0.369	0.055
RECEIVABLE	0.756	0.011	0.665	0.006	0.692	0.012	0.414	0.199	0.638	0.017	0.275	0.276
SEGMENTS	0.064	0.036	0.021	0.383	0.049	0.064	0.037	0.186	0.016	0.472	0.010	0.626
LOSS	0.068	0.422	0.278	<.0001	0.266	<.0001	0.204	0.005	0.381	<.0001	0.296	<.0001
FOREIGH_BUS	0.358	0.000	0.239	0.003	0.096	0.197	0.124	0.125	0.310	<.0001	0.285	<.0001
NET_LIABILITY	0.191	0.408	0.556	0.000	0.129	0.406	0.331	0.054	0.172	0.298	0.332	0.020
OPINION	-0.097	0.332	0.129	0.116	0.152	0.018	0.137	0.056	0.156	0.028	0.131	0.073
BUSY_SEASON	0.029	0.762	0.045	0.465	-0.033	0.634	0.064	0.395	0.101	0.131	0.063	0.314
FROM_BIGN	-0.241	0.451	-0.075	0.408	0.269	0.008	0.488	<.0001	0.360	<.0001	0.422	<.0001
FROM_NON_BIGN	-0.007	0.981	0.200	0.167	-0.015	0.903	-0.178	0.205	0.051	0.652	0.396	0.001
FROM_AA					0.018	0.8728						
No. of OBS	230		344		468		512		669		722	
Adj R^2	0.5805		0.6036		0.497		0.4359		0.5167		0.5600	

Table 8
Risk Effects on Audit Fees and Auditor Switching

	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004		Year 2005	
	Coff.	P-value	Coff.	P-value	Coff.	P-value	Coff.	P-value	Coff.	P-value	Coff.	P-value
INTERCEPT	7.808	0.053	8.997	0.004	13.665	<.0001	17.397	<.0001	15.028	<.0001	6.929	0.029
LOGASSET	-0.055	0.901	-0.160	0.645	-0.635	0.034	-1.048	0.001	-0.844	0.015	0.066	0.850
SQ_LOGASSET	0.013	0.272	0.016	0.091	0.029	0.001	0.040	<.0001	0.036	0.000	0.012	0.225
ASSET_TURN	0.095	0.024	0.033	0.276	0.059	0.074	0.014	0.716	0.097	0.003	0.061	0.036
ROA	-0.003	0.007	0.000	0.476	0.000	0.307	0.000	0.079	-0.001	0.010	-0.002	0.003
QUICK	-0.004	0.653	-0.012	0.141	-0.024	0.051	-0.030	0.003	-0.010	0.180	-0.010	0.230
SEGMENTS	0.073	0.014	0.043	0.078	0.051	0.049	0.046	0.086	0.022	0.305	0.015	0.454
FOREIGH_BUS	0.317	0.000	0.214	0.007	0.126	0.092	0.119	0.126	0.321	<.0001	0.291	<.0001
BUSY_SEASON	0.024	0.798	0.012	0.850	-0.037	0.591	0.042	0.559	0.115	0.069	0.082	0.171
SECOND	0.183	0.011	0.250	<.0001	0.257	<.0001	0.383	<.0001	0.511	<.0001	0.510	<.0001
FROM_BIGN	-0.695	0.534	-0.075	0.440	0.164	0.154	0.406	<.0001	0.251	0.001	0.464	<.0001
FROM_NON_BIGN	0.207	0.612	0.153	0.356	0.038	0.773	-0.169	0.297	0.095	0.488	0.367	0.004
RISK	0.155	0.009	0.170	<.0001	0.112	0.002	0.142	0.015	0.152	0.001	0.110	0.001
RISK_FROM_BIGN	0.409	0.619	-0.002	0.979	0.082	0.305	0.087	0.318	0.152	0.051	-0.061	0.367
RISK_FROM_NON_BIGN	-0.176	0.295	-0.007	0.953	0.092	0.603	0.041	0.682	0.107	0.322	0.175	0.067
FROM_AA					-0.042	0.731						
RISK_FROM_AA					0.118	0.294						
Adj R^2	0.5933		0.597		0.5005		0.4711		0.5536		722	
No. of OBS	230		344		468		512		668		0.5902	

RISK_FROM_BIGN is the interaction term between RISK and the dummy variable FROM_BIGN
RISK_FROM_NON_BIGN is the interaction term between RISK and FROM_NON_BIGN
RISK_FROM_AA is the interaction term between RISK and FROM_AA.