FINANCIAL STATEMENT FOOTNOTE DISCLOSURES, SPECIALIST AUDITORS, AND SPECIALIST AUDIT FEE PREMIUM

by

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FINANCIAL STATEMENT FOOTNOTE DISCLOSURES,

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AUDIT FEE PREMIUM

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This paper examines the relation between financial statement footnote disclosures (my proxy for financial statement complexity) and specialist auditors as well as its relation with specialist audit fee premium. Using computer linguistic techniques, I specifically use the number of Arabic numerals (quantitative) and alphabetical words (qualitative) in footnote disclosures to proxy for financial statement complexity. I hypothesize and find that companies audited by specialist auditors are associated with more quantitative and qualitative footnote disclosures than those audited by non-specialist auditors. Moreover, I hypothesize and find that audit fees are positively related to quantitative and qualitative footnote disclosures and they attribute about 20% of the specialist audit fee premium. Finally, the positive association between audit fees and quantitative footnote disclosures is stronger for companies audited by specialist auditors. Together, the results

suggest that specialist auditors audit more complex financial statements and that the specialist audit fee premium is partly attributable to financial statement complexity.

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CHAPTER 1

INTRODUCTION

A 2003 General Accounting Office (GAO) survey found that a key motivation for the wave of mergers of audit firms in the 1980s and 1990s was to gain technical expertise and become industry specialists so that they would be able to better serve clients with dramatically increased complexity (GAO 2003).[1] Prior research shows that specialist auditors charge an audit fee premium relative to non-specialist auditors (see Craswell et al. 1995; Ferguson et al. 2003), but no academic study has directly examined the rationale for such premiums. The objective of this paper is to examine the relation between financial statement complexity and specialist auditors, and between financial statement complexity and specialist audit fee premiums.

The Security and Exchange Commission's (SEC's) Advisory Committee on Improvements to Financial Reporting (ACIFR) defines financial statement complexity as the difficulty to "communicate the economic substance of a transaction or event and the overall financial position and results of a company" (SEC 2008). Companies with more complex transactions whose economic substance is difficult to understand are likely to have more financial statement footnote disclosures (Schipper 2007; KPMG 2011). Davis-Friday et al. (1999) and Aboody et al. (2004) show that investors use financial statement footnote disclosures to better "understand the economic substance of transactions" (SEC 2008). I measure financial

[1] Auditees/clients are referred to as companies.

statement complexity as the quantity of footnote disclosures. Using this measure of complexity, I specifically examine (1) whether companies audited by specialist auditors have more financial statement footnote disclosures than those audited by non-specialist auditors; and (2) whether the specialist auditors' audit fees are higher for companies that have more financial statement footnote disclosures, i.e., whether the specialist audit fee premium is attributable to the quantity of financial statement footnote disclosures.

Auditing complex companies requires expertise (Bonner and Lewis 1990). Hence, the more complex a company, the more audit expertise is needed. Audit firms differentiate themselves from their competitors by gaining expertise in dealing with financial statement complexity and becoming specialists (GAO 2003). Based on these demand- and supply-side arguments, I hypothesize that companies audited by specialist auditors are associated with more financial statement footnote disclosures than those audited by non-specialist auditors.

Financial statement footnote disclosures are positively associated with audit effort because auditing more complex companies requires more audit effort (O'Keefe et al. 1994). Compared to less complex companies, more complex companies are likely to have more financial statement footnote disclosures, which, as suggested by Peterson (2012), signal higher audit risk. Simunic (1980) posits, and prior research generally finds, audit fees to be positively related to audit effort and audit risk. I thus hypothesize that audit fees are positively associated with the quantity of financial statement footnote disclosures, and to the extent that financial statement footnote disclosures correlate positively with auditing by specialist auditors, footnote disclosures help to explain the specialist audit fee premium. Finally, since specialist auditors

charge an audit fee premium for their expertise, I expect that specialist auditors charge higher audit fees per unit of footnote disclosure than non-specialist auditors do.

My initial sample includes all U.S. companies in the Audit Analytics database with audit fee information from 2000 to 2009. I obtain for each of these, from the 10-K Wizard, 10-K filings between 2000 and 2009. Following Li's (2008) procedure, I extract from the 10-K filings financial statement footnote disclosures; and tag and count both Arabic numerals and alphabetical words in the footnotes.[2] I compute two measures of financial statement footnote disclosures: quantitative and qualitative, the former as the natural log of the number of Arabic numerals,[3] the latter as the natural log of the number of alphabetical words. My final sample contains 26,199 company-year observations from 4,938 unique companies.

Following Francis et al. (2005), I measure auditor industry expertise at both the national and city levels. At each level, following Krishnan (2003), I measure auditor industry expertise in terms of industry market share and auditor portfolio share. Industry market share is computed, separately at the national and city levels, as the audit fees that an auditor gets divided by the total audit fees that all auditors get in a particular industry. Auditors with the greatest market share in an industry are classified as industry specialist auditors. To measure auditor industry expertise in terms of auditor portfolio share, I first compute the total audit fees that an auditor gets from companies across all industries. Auditors for which total audit fees exceed median total audit fees across all auditors in the sample are classified as big auditors. Auditor portfolio share is then

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[2]Appendix A provides the algorithms used to extract financial statement footnotes and calculate my footnote disclosure measures.

[3]Following Blankespoor (2012) and Lundholm et al. (2012), these Arabic numerals exclude numerals incorporated in years, dates, and item and regulation numbers (e.g., SFAS No. 132).

computed, separately at the national and city levels, as the audit fees earned in a given industry divided by the total audit fees that an auditor earns. For each big auditor, I rank the industries audited in descending order according to their auditor portfolio share. The top industries that constitute 50% of an auditor's total audit fees are classified as industries that the auditor specializes in. There are thus four measures of auditor industry expertise: national specialist auditors according to industry market share; city specialist auditors according to industry market share; national specialist auditors according to auditor portfolio share; and city specialist auditors according to auditor portfolio share.

The mean quantitative footnote disclosure measures are 6.49 for city specialist auditors according to industry market share and 6.31 for non-specialist auditors; a statistically significant difference of 0.19 in mean quantitative footnote disclosure measure shows that on average companies audited by city specialist auditors have 20.92% more Arabic numerals in financial statement footnote disclosures than those audited by non-specialist auditors.[4] The mean qualitative footnote disclosure measures are 8.95 for city specialist auditors according to industry market share and 8.84 for non-specialist auditors; a statistically significant difference of 0.11 in mean qualitative footnote disclosure measure shows that on average companies audited by city specialist auditors have 11.63% more alphabetical words in financial statement footnote disclosures than those audited by non-specialist auditors. Controlling for company characteristics that may also affect financial statement footnote disclosures, I find that both quantitative and qualitative footnote disclosure measures are positively associated with specialist auditors. I

[4] The percentage difference in the number of Arabic numerals is calculated as e^z -1, where z is the difference in the log of the number of Arabic numerals (quantitative footnote disclosure measure).

obtain similar results for the three other measures of specialist auditors. Collectively, the results are consistent with the hypothesis that predicts a positive relation between quantity of footnote disclosures and specialist auditors.

To test the relation between footnote disclosures and audit fees, I first replicate prior studies that establish specialist audit fee premium, and then include the quantitative and qualitative financial statement footnote disclosure measures. Consistent with my prediction, using both quantitative and qualitative measures and controlling for all factors shown in prior studies as determinants of audit fees, I find that financial statement footnote disclosures are positively associated with audit fees. More important, comparing the average specialist premium estimates obtained from the audit fee model with and without footnote disclosures, I find that the specialist premium decreases by roughly 20% when footnote disclosures are included in the regression. This suggests that the specialist audit fee premium is partly attributable to financial statement complexity.

Finally, to test the sensitivity of audit fees to footnote disclosures between specialists and non-specialists, I interact quantitative and qualitative footnote disclosure measures with measures of specialist auditors. Holding other variables at their median values, the specialist audit fee premium increases from 49.18% to 78.60% when quantitative and qualitative footnote disclosure measures increase from the 25th to the 75th percentile value.[5] This shows that the specialist audit fee premium increases with the quantity of financial statement footnote

[5] Following Craswell et al. (1995), I calculate the specialist audit fee premium as the percentage effect of the intercept shift on audit fees in dollars, defined as e^z -1, where z is the coefficient for the specialist auditor dummy (*SPEi*, *i*=1, 2, 3, and 4). Because I include the interaction between specialist auditors and footnote disclosures in the audit fee model, I calculate z as sum of the coefficients on the four specialist dummies, and sum of the coefficients of the eight interactions multiplied by the corresponding values of footnote disclosure measures.

disclosures. Compared to non-specialist auditors, specialist auditors charge higher audit fees for the same quantity of financial statement footnote disclosures.

This paper makes the following contributions to the auditing literature. First, by establishing a positive association between footnote disclosures and specialist auditors, my study suggests that financial statement complexity is a likely factor that has increased the demand for specialist auditors. Second, the paper offers a partial explanation for the specialist audit fee premium, which is shown to be not entirely monopoly rent, but is rather attributable, at least in part, to financial statement complexity.

I also develop new measures of financial statement complexity. Prior research uses such measures as the number of segments and proportion of foreign to total assets extracted from financial statements (see, for example, Simunic 1980). But these measures could fail to fully reflect the complexity of companies when they engage in more complex transactions and adopt new valuation methods that are disclosed mostly in footnotes. In other related research, Li (2008) and You and Zhang (2009) focus exclusively on the number of alphabetical words in footnote disclosures. Compared to these studies, I consider the quantities of both Arabic numerals and alphabetical words in financial statement footnote disclosures. It is important to consider both measures because Huang et al. (2012) argue that Arabic numerals are more easily verified and processed than alphabetical words.

The rest of the paper is structured as follows. Chapter 2 reviews the literature. In Chapter 3, I develop the hypotheses. The data and research design are described in Chapter 4. Empirical analyses and results are presented and discussed in Chapter 5. Finally Chapter 6 concludes.

CHAPTER 2

LITERATURE REVIEW

2.1 Auditor Industry Specialization

Industry specialization has been one important strategy adopted by audit firms to increase their market share (Causholli et al. 2011). A 2003 General Accounting Office (GAO) survey shows that companies attach "very great importance" to "technical skills/knowledge of the industry" when choosing auditors (GAO 2003). In addition, the prevalence of specialist audit fee premium provides incentive to develop industry-specific expertise. Hence, Section 2.1.1 and 2.1.2 review the literature on the demand for specialist auditors and specialist audit fee premium, respectively.

2.1.1 Demand for Specialist Auditors

The first research stream explores the relation between industry characteristics and auditor industry specialization. Cahan et al. (2008), who measure industry specialization by the market share in terms of the client assets of the two largest auditors in an industry, show that industry specialization is positively associated with industry investment opportunity set (IOS) levels and the homogeneity thereof. They argue that auditing, being more difficult for high IOS companies, requires industry-specific expertise. Because auditors can apply the same expertise to other clients in the industry, higher levels of specialization are observed within homogeneous industries. They also find that auditor dominance is to a lesser extent in industries in which

companies have more homogenous IOS, as the higher proprietary costs implicit in companies with homogeneous IOS prevent companies from hiring the same auditor as their peers. Finally, they document a positive association between audit fees and industry IOS levels and one between audit fees and the homogeneity of IOS levels across companies within the industry.

Similarly, Cairney and Young (2006) investigate the relation between industry homogeneity and audit firms' decision to acquire industry-specific expertise. They show that industry specialization is higher in industries in which companies have homogenous change in operating expenses. Furthermore, for industries audited by each audit firm, they compute auditor portfolio share, and find industry's portfolio share to be positively related to industry homogeneity, indicating that audit firms focus more on industries in which clients have similar operations.

There are also studies investigating company characteristics that affect demand for specialist auditors. Godfrey and Hamilton (2005) hypothesize, and find, that companies with higher R&D expenditure are more likely to choose industry specialist auditors and auditors that specialize in auditing R&D contracts. They argue that because R&D investments are of high uncertainty and difficult to observe, information asymmetry and agency costs are likely to be high in companies with intensive R&D investments. Companies with higher R&D investments are more likely to choose specialists for high-quality audits. They further find that the positive association between R&D expenditure and specialist auditors is stronger for smaller companies. This is because larger companies are inclined to choose Big 6 auditors to maintain auditor independence. Dunn and Mayhew (2004) document a positive relation between analysts' disclosure quality evaluation in AIMR reports (a proxy for disclosure quality) and industry

specialist auditors. Because industry specialist auditors can help with industry-specific disclosures, companies choose specialist auditors to provide high-quality disclosures.

In an international setting, and consistent with prior studies, Ettredge et al. (2009) find that companies with higher sales, market to book ratio, and proportion of property, plant and equipment are more likely to choose specialist auditors. Demand for specialist auditors is stronger in regulated industries, in which the difference in audit quality between specialists and non-specialists tends to be greater. With respect to country-level factors, because audit and financial reporting quality are valued more in countries with better investor protection and economic development, Ettredge et al. (2009) hypothesize, and find, that companies in such countries are more likely to choose industry specialist auditors. They document as well a positive relation between industry specialist auditors and the quality of a nation's financial reporting environment.

2.1.2 Specialist Audit Fee Premium

Causholli et al. (2011) maintain that specialist auditors acquire industry expertise so as to differentiate themselves from competitors in order to justify charging an audit fee premium. This suggests that any specialist audit fee premium is associated with being the monopolist in a particular industry. Several papers provide empirical evidence of a specialist audit fee premium. Craswell et al. (1995) are the first to distinguish between the general Big 8, and industry-specific Big 8, audit fee premiums. They argue that agency costs drive demand for high-quality audits. Given the preponderance of industry-specific audits, audit firms specialize in order to provide high-quality audits in particular industries and require a return on their investment in the acquisition of that industry-specific expertise. Using a sample of Australian firms from 1982-

1987, they find, consistent with their prediction, that in industries with specialists, audit fees for companies audited by Big 8 specialists are 34% higher than for those audited by non-specialists. They further show that the general Big 8 audit fee premium is lower in industries with than in industries without specialists.

Ferguson and Stokes (2002) reexamine the Big 5/6 and specialist audit fee premiums in the merger wave of the Big 8(6) and Big 6(5) audit firms in the 1990s. The merger enables national audit firms to capture greater industry market share and become specialists in particular industries. They find limited evidence that Big 5/6 specialist auditors charge higher audit fees than Big 5/6 non-specialist auditors, in which specialist auditors are measured by industry market share with different cutoffs. Their results raised concern about measuring auditor industry specialization by industry market share. They further find that the Big 5/6 audit fee premium applies only to industries with specialists.

DeFond et al. (2000) focus on Hong Kong owing to the presence of a non-Big 6 local audit firm comparable in size to the Big 6 audit firms in that country. They find, consistent with Craswell et al. (1995), that companies audited by Big 6 specialist auditors pay audit fees 29% higher than those audited by Big 6 non-specialists, and companies audited by Big 6 non-specialists pay audit fees 37% higher than those audited by non-Big 6 auditors. In contrast, in industries in which it does not specialize, the non-Big 6 local firm's audit fees do not differ significantly from those of other non-Big 6 audit firms. Interestingly, the non-Big 6 local audit firm offers, in the property sector in which it does specialize, a 31% discount over other non-Big 6 audit firms. The results show that this non-Big 6 local audit firm earns neither a general premium nor a premium for industry specialization.

In the U.S. audit market, Mayhew and Wilkins (2003) find audit fees for initial public offerings to be negatively associated with an auditor's industry market share. This is because specialist auditors perform audits more efficiently and allocate their specialization costs to a large number of clients. Specialist auditors share part of this economy of scale-derived savings with clients. However, auditors with industry market share at least 10% greater than that of their nearest competitor charge a premium. This result suggests that specialist auditors with significantly higher market share successfully differentiate themselves from competitors, and, further, that monopolist power contributes to the specialist audit fee premium. Consistent with Porter (1985), who maintains that the premium for differentiation varies with clients' bargaining power, Casterella et al. (2004) find that among Big 6 auditors, specialist auditors charge an audit fee premium only for smaller clients (a proxy for lower bargaining power). For larger clients, there is no premium for industry specialization among Big 6 auditors, and audit fees are negatively related to the ratio of client sales to total sales for all industry peers that the auditor audits.

According to Cahan et al. (2011), auditors can increase industry market share and become specialists by adopting either strategy, a product differentiation strategy whereby auditors acquire the expertise to audit a few, big, complex clients, or a cost minimization strategy whereby auditors audit many small clients to lower the cost of audits. Cahan et al. (2011), who classify specialist auditors under these strategies according to the ratio of the number of companies audited by the specialist to the number of companies in the industry, find audit fees to be higher (lower) for specialist auditors covering a low (high) proportion of the companies in an

industry. This suggests that only specialist auditors that adopt the product differentiation strategy can charge a specialist audit fee premium.

Given that audit services are conducted at local offices, a number of studies have used city specialist auditors to examine the specialist audit fee premium. Ferguson et al. (2003) provide contrasting views of industry-specific expertise. That industry-specific expertise can be transferred across different offices within the same firm through nationwide training programs, uniform auditing procedures, and communication across offices indicates that different audit offices within the same audit firm can acquire the same industry expertise. But that all industry expertise is tied to individual auditors who usually work in only one local audit office indicates that each local audit office acquires its own industry expertise. Using audit fee data for companies audited by Big 5 auditors in the five largest cities in Australia, Ferguson et al. (2003) calculate the national industry market share for each audit firm and city industry market share for each audit office, then classify auditors, based on national and city industry market share, as national or city industry specialists. They document that national specialist auditors charge a premium only in cities in which they are city specialists as well. Big 5 national specialists charge no premium in cities in which they are not city industry specialists.

Francis et al. (2005) focus on the U.S. audit market because it is more decentralized with companies and audit offices widespread across the country, which makes it difficult for auditors to communicate across different offices. They similarly show, in the U.S. audit market, that Big 5 auditors that are both national and city industry specialists charge a 19% fee premium over Big 5 non-specialist auditors, but national specialist auditors that are not city specialist auditors do not charge a premium.

Hay and Jeter (2011) use the New Zealand dataset with both public and private companies, which enables them to more accurately compute the industry market share to classify specialist auditors. They show that, consistent with Francis et al. (2005), auditors who are both national and city specialists, and who are city specialists but not national specialists charge an audit fee premium. They also find that the specialist audit fee premium applies mostly to larger, private, and less risky companies because specialist auditors for these attractive companies successfully differentiate themselves from other non-specialist auditors. They finally show that self selection between auditors and clients does not account for the specialist audit fee premium.

Engagement partners play a decisive role in executing client audits. Zerni (2012) investigates audit pricing at the audit partner level for Swedish firms. He finds audit fees to be higher for industry specialist than for non-specialist audit partners. Examining the effect of auditor specialization in public companies, he finds evidence of audit fee premiums for audit partners that specialize in auditing public companies, which, being more complex and riskier, requires expertise different from that relevant to auditing private companies. He further shows that companies audited by audit partners who are both industry and public company specialists pay the highest audit fees.

2.2 Complexity and Auditing

2.2.1 Complexity and Audit Fees

A large stream of audit fee literature is based on Simunic's (1980) model. The model is expressed in Equation (2.1).

$$E(c) = cq + E(d|a,q)E(\theta) \qquad (2.1)$$

where *E(c)* is the expected total cost of the audit; *c* is the per-unit cost of resources used in audit; *q* is the quantity of resources auditors use (a measure of auditor effort); *E(d|a,q)* is the present value of possible future loss, conditional on *a* (the quantity of resources firms use) and *q* (the quantity of resources auditors use); *E(θ)* is the fraction of loss that auditors share, which is a function of firm attributes.

Audit fees equal the expected total cost of the audit. It has two components: (1) direct production cost (*cq*), and (2) risk premium, which equals expected future loss (*E(d|a,q)E(θ)*). Based on the assessed risk, auditors determine the amount of audit effort (*q*). High audit effort increases the direct production cost, but decreases the expected future loss. When auditing risky firms, auditors either devote more effort to reduce the expected loss or charge a higher risk premium to cover the expected loss. Both choices will lead to higher audit fees.

Prior literature has extensively examined the determinants of audit fees. Hay et al. (2006) categorize the determinants into the following groups: firm attributes, auditor attributes, and audit engagement attributes.

A research stream directly examines the association between complexity and audit fees. Simunic (1980) posits a positive relation between audit fees and company complexity. He argues that complex companies require more audit effort to monitor the activity of various decision centers. On the other hand, he argues that auditors assess higher risk for complex companies with decentralized and diversified operations. He specifically measures complexity by the number of subsidiaries, the number of two-digit SIC industries that the company operates in, and the proportion of company's foreign to total assets. Consistent with his prediction, the empirical results support a positive relation between audit fees and all three complexity measures.

The findings in Francis and Simon (1987) are consistent with those in Simunic (1980). They measure complexity by the number of subsidiaries and the proportion of foreign to total assets. The positive association between the two complexity measures and audit fees applies to U.S. companies audited by Big 8, second-tier national, and local audit firms.

2.2.2 Complexity and Audit Production

Later studies directly investigate the relation between complexity and audit production. Davidson and Gist (1996) regress total audit hours on the number of subsidiaries (a proxy for complexity), and show that total audit hours are higher for more complex companies. In addition, comparing the audit planning hours with total audit hours, they find that auditing complex companies involves a higher proportion of audit planning.

Using audit hour data for U.S. companies from one of the Big 6 audit firms, O'Keefe et al. (1994) examine how company complexity is related to the amount and mix of audit labor. They show that audit labor hours at different levels (partner, manager, senior, and staff) and total audit fees are all positively related to the subjective rating of client complexity by audit partner. Moreover, as complexity increases, labor hours at different levels all increase by the same amount, leaving the audit labor mix fixed. Bell et al. (2001) measure complexity by the proportion of foreign to total assets and an ordinary operational complexity score. They disaggregate total audit fees into audit hours and audit fee per hour. They show that, consistent with O'Keefe et al. (1994), both total audit fees and audit hours are positively related to the two complexity measures. However, they do not find evidence that audit fee per hour increases with complexity, which supports the finding in O'Keefe et al. (1994) that audit labor mix remains the same regardless of client complexity.

Hackenbrack and Knechel (1997) investigate how client complexity affects auditors' resource allocation decision. They disaggregate total audit hours into hours allocated to different audit activities (planning, internal control, etc.) at different levels (manager, partner, etc.). They find that the number of subsidiaries (a proxy for complexity) is positively related to all audit activities expect finalization of financial statements. Regarding the increase in magnitude across different audit activities and labor grades, they find that client complexity is associated with the greatest increase in the time that managers spend on non-critical substantive tests.

Because audit hour data from audit firms is highly proprietary, most studies focus on audit production in only one audit firm. Blokdijk et al. (2006) examine the difference in audit production between Big 5 and non-Big 5 audit firms. They show that total audit hours for both Big 5 and non-Big 5 audit firms increase with client complexity. When disaggregating total audit hours into hours in different audit phases (planning, risk assessment, substantive tests, and completion), they find that complexity is positively related to planning and substantive test hours for Big 5 audit firms, and planning and risk assessment hours for non-Big 5 audit firms. They argue that this is because non-Big 5 audit firms adopt the "business risk" approach which lays less emphasis on substantive tests.

Finally, based on Data Envelopment Analysis (DEA), Knechel et al. (2009) use cost of labor as input and hours in gathering audit evidence as output to compute audit efficiency. Controlling for other client characteristics, they show that audit engagements are less efficient for companies with than those without subsidiaries. However, they provide no evidence on the significant association between audit efficiency and their client organizational complexity measure.

CHAPTER 3

HYPOTHESIS DEVELOPMENT

Before developing the hypothesis that relates financial statement complexity to specialist auditors, I establish the direct link between the underlying construct (complexity) and my measure (financial statement footnote disclosures) by discussing the relation of one to the other.

3.1 Financial Statement Footnote Disclosures and Financial Statement Complexity

As noted in the introduction, the SEC's Advisory Committee on Improvements to Financial Reporting, ACIFR, defines financial statement complexity as the difficulty to "communicate the economic substance of a transaction or event and the overall financial position and results of a company" (SEC 2008). Footnote disclosures would be useful as they help to elaborate complicated transactions and related disclosures. Indeed, Gopalakrishnan (1994) and Davis-Friday et al. (1999) find that stock prices react to obligations for post-retirement benefits disclosed in footnotes. After controlling for benefits related to stock-based compensation, Aboody et al. (2004) similarly document that the stock price is lower for companies with more unrecognized stock-based compensation disclosed in footnotes under SFAS No. 123. Such findings suggest that financial statement footnote disclosures help investors infer the economic substance of complex transactions.

Schipper (2007) provides a framework for classifying financial statement footnote disclosures into the following four types: (1) unrecognized items, (2) alternative measurements of recognized items, (3) disaggregation of recognized items, and (4) assumptions and estimates.

First, unrecognized items disclosed in footnotes provide descriptions of events not yet recognized in financial statements. For example, Accounting Standards Update No. 2010-20 (Topic 450) requires that companies disclose in the footnotes the probability and estimated amount of loss associated with any loss contingency if the loss contingency is probable or reasonably possible.

Second, alternative measurements of recognized items are provided in footnotes when recognized measurements are less preferred or several measurements are available for recognizing the transaction in the financial statements. For example, companies that record inventory under LIFO should disclose in footnotes the inventory value under FIFO.

Third, footnotes include the disaggregation of recognized items to emphasize the disclosure of recognized items that behave differently. For instance, SFAS No. 132R requires that companies disclose separately, in footnotes, the fair value of assets and liabilities according to the fair value hierarchy. Fair value measurements are disclosed according to whether they are based on quoted prices for identical assets and liabilities in active markets (level 1), significant other observable inputs (level 2), or significant unobservable inputs (level 3).

Fourth, assumptions and estimates include companies' descriptions of accounting assumptions, estimates, and inputs associated with the recognition of transactions in financial statements. For example, Accounting Standards Update No. 2010-06 (Topic 820) requires that

companies disclose valuation techniques, unobservable inputs to measure fair values, and the sensitivity of fair value measurements to changes in unobservable inputs.

Within Schipper's (2007) framework, the intent of footnote disclosures is typically to help to communicate the economic substance of complex transactions. As such, companies with more complex transactions will likely have more financial statement footnote disclosures. Consistent with this notion, KPMG (2011) suggests that the quantity of footnote disclosures increases with transaction complexity. Accordingly, I use quantity of footnote disclosures as a measure of financial statement complexity.

3.2 Financial Statement Footnote Disclosures and Specialist Auditors

Auditors are required to audit financial statements and footnote disclosures. Auditing footnote disclosures requires not only general domain knowledge, such as knowledge of accounting standards and possible alternative measurements, but also sub-specialty knowledge, such as knowledge of industry practices and trends (Maletta and Wright 1996). Bonner and Lewis (1990) relate general domain knowledge and sub-specialty knowledge to expertise.[6]

Prior studies show that auditors with expertise perform better than auditors without expertise in complex tasks that require general domain knowledge or sub-specialty knowledge (Abdolmohammadi and Wright 1987; Bonner and Lewis 1990). Therefore, auditing companies with relatively more complex transactions requires more expertise from auditors; and, as such, these companies are more likely to engage specialist auditors. Consistent with this demand-side

[6]Bonner and Lewis (1990) categorize the determinants of expertise into general domain knowledge, sub-specialty knowledge, general business knowledge, and general problem-solving ability.

argument (or company's perspective), a GAO (2003) survey finds that companies choose Big 4 auditors mainly for their "specialized expertise".

From a supply side (audit firm's perspective), a GAO survey (2003) also finds that auditors develop "technical expertise" to accommodate "complex financial arrangements adopted by their clients." This finding suggests that auditors strategically differentiate themselves from their competitors by developing expertise in dealing with financial statement complexity. Craswell et al. (1995) show that, for their quality-differentiated audits, national Big 8 specialist auditors charge audit fees 34% higher compared to Big 8 non-specialist auditors. The potential to earn an audit fee premium thus provides incentive for auditors to develop the expertise needed to deal with financial statement complexity.

Based on both demand- and supply-side arguments, and taking financial statement footnote disclosures as a measure of financial statement complexity, I state my first hypothesis as follows.[7]

H1: Companies audited by specialist auditors are associated with more financial statement footnote disclosures than those audited by non-specialist auditors, ceteris paribus.

3.3 Financial Statement Footnote Disclosures and Audit Fees

Using a subjective rating of company complexity by audit partners, O'Keefe et al. (1994) find that the more complex a company is, the more audit effort it requires from auditors. Peterson (2012) documents that the complexity of companies' revenue recognition methods is positively

[7]The null hypothesis is that financial statement footnote disclosures are not associated with specialist auditors. All auditors are required to have proper training and adequate technical expertise to audit their clients (AU Section 210).

related to the likelihood of restating their revenues, suggesting that audit risk is higher for more complex companies. Given that financial statement footnote disclosures measure financial statement complexity, companies with large number of financial statement footnote disclosures are associated with higher audit risk and also require greater audit effort. Simunic (1980) posits a model in which audit fees are a function of audit effort and audit risk. I hypothesize that audit fees are higher for companies with more financial statement footnote disclosures.

H2a: Audit fees are positively associated with the quantity of financial statement footnote disclosures, ceteris paribus.

Given that companies audited by specialist auditors are associated with more financial statement footnote disclosures than those audited by non-specialist auditors (my first hypothesis), I further predict the following.

H2b: The specialist audit fee premium is partly attributable to financial statement footnote disclosures.

As discussed in H1, auditing more complex companies requires more expertise compared to auditing less complex companies. Thus, companies with more financial statement footnote disclosures require more expertise. Given that specialist auditors charge an audit fee premium for their expertise compared to non-specialist auditors (Craswell et al. 1995), I expect that, relative to non-specialist auditors, specialist auditors charge higher audit fees for the same quantity of disclosures (or per unit of disclosure). So I state my last hypothesis as follows.

H2c: Compared to non-specialist auditors, specialist auditors charge higher audit fees for the same quantity of financial statement footnote disclosures, ceteris paribus.

CHAPTER 4

SAMPLE AND RESEARCH DESIGN

4.1 Sample

My initial sample includes all U.S. companies in the Audit Analytics database with audit fee information from 2000 to 2009. The sample period starts in 2000 when the SEC first required public companies to disclose audit fees in proxy statements. I obtain for each company, from the 10-K Wizard, 10-K filings between 2000 and 2009. After excluding observations with missing financial data, I arrive at a final sample of 26,199 company-year observations from 4,938 unique companies.

4.2 Variables

4.2.1 Measure of Financial Statements and Footnote Disclosures

Following Li (2008), I obtain financial statement footnote disclosure measures by using a Perl code to perform the following procedures. First, I remove all HTML formats from the raw 10-K filings. Second, I extract the financial statements from the remaining 10-K filings. Third, I then extract all footnote disclosures accompanying the financial statements. Fourth, I count the number of Arabic numerals in the financial statements separately from the number of Arabic numerals and alphabetical words in the footnotes. Following Lundholm et al. (2012), I define as an Arabic numeral a sequence of digits (numerical string) preceded and followed by blanks or non-numeric characters. Following Blankespoor (2012) and Lundholm et al. (2012), I exclude

numerals incorporated in years, dates, and item and regulation numbers. The quantitative financial statement measure *FS_QUAN* is the natural log of the number of Arabic numerals in the financial statements. The quantitative footnote disclosure measure *FT_QUAN* is the natural log of the number of Arabic numerals in the financial statement footnotes. Following Li (2008), I use Lingua-EN-Fathom to compute the number of alphabetical words.[8] The qualitative financial statement footnote disclosure measure *FT_QUAL* is the natural log of the number of alphabetical words in the financial statement footnotes. Appendix A provides details of the entire procedure.

4.2.2 Classification of Specialist Auditors

Following Francis et al. (2005) and Reichelt and Wang (2010), auditor industry expertise is measured at both the national and city levels.[9] National-level auditor industry expertise is based on audit fees earned within a two-digit SIC industry by an audit firm national wide, and city-level auditor industry expertise is based on audit fees earned within a two-digit SIC industry by local audit offices in a particular city. Following Francis et al. (2005), a city is defined as a Core Based Statistical Area (CBSA, formerly Metropolitan Statistical Area, or MSA).[10] Audit Analytics identifies the geographic city from the audit report of the financial statements in the 10-K filings. If the auditor's geographic city information is missing from the Audit Analytics database, I obtain the zip code of the audited company's headquarters from Compustat. In these

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[8] The Perl package is available at http://search.cpan.org/dist/Lingua-EN-Fathom/lib/Lingua/EN/Fathom.pm.

[9] In this section, "auditors" refer to audit firms/audit offices.

[10] The U.S. Census Bureau's CBSA cross-map (2006 definition) is available at http://www.census.gov/population/metro/data/other.html. The Census Bureau also provides a table that relates zip codes to CBSA codes.

cases, I follow Francis et al. (2005) in assuming that the audit offices are located in the same geographic cities as the companies' headquarters. Each auditor is assigned the CBSA code associated with its geographic city or zip code.

At each level, national and city, following Krishnan (2003), I use industry market share or auditor portfolio share to measure auditor industry expertise.[11] Industry market share is computed, separately at the national and city levels, as the audit fees that an auditor gets in a two-digit SIC industry relative to the total audit fees that all auditors get in that two-digit SIC industry, thus,

$$MS_{ik} = \frac{\sum_{j=1}^{J_{ik}} Fee_{ijk}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ik}} Fee_{ijk}} \quad (4.1)$$

where J_{ik} is the number of companies audited by auditor i in industry k, I_k is the number of auditors in industry k, and Fee_{ijk} is the audit fee charged by auditor i for company j in industry k.

Following Francis et al. (2005) and Reichelt and Wang (2010), I classify as an industry specialist the auditor with the largest market share in an industry. Measuring auditor industry expertise according to industry market share assumes that an auditor acquires industry-specific expertise by auditing companies in that industry. Causholli et al. (2011) and Neal and Riley (2004) note the following shortcomings in the classification of specialist auditors based on industry market share. First, small auditors audit fewer companies and earn lower total audit fees. Thus, a large proportion of specialist auditors classified according to industry market share are big auditors even if small auditors may specialize in certain industry. Second, only the

[11] Krishnan (2003) computes these two measures based on client sales. In this section, I compute industry market share and auditor portfolio share based on audit fees rather than sales. In a robustness test, I use sales and obtain similar results (see Chapter 5, Section 5.3.3).

auditor with the greatest industry market share in each industry is classified as a specialist auditor. In an industry with many companies, however, more than one auditor may invest in the acquisition of expertise as long as he earns a significant amount of audit fees from certain industry.

As such, I use the following specialist measure based on the audit fees that an auditor gets from each industry audited. At each level, national and city, I first compute the total audit fees that an auditor gets from companies across all industries. The auditor is classified as a big auditor if total audit fees exceed the median total audit fees across all auditors in the sample. I then follow Krishnan (2003) and compute auditor portfolio share, separately at the national and city levels, as the audit fees an auditor gets from a two-digit SIC industry relative to the audit fees an auditor gets from companies across all industries, thus,

$$PS_{ik} = \frac{\sum_{j=1}^{J_{ik}} Fee_{ijk}}{\sum_{k=1}^{K} \sum_{j=1}^{J_{ik}} Fee_{ijk}} \quad (4.2)$$

where J_{ik} is the number of companies audited by auditor i in industry k, K is the number of two-digit SIC industries, and Fee_{ijk} is the audit fee charged by auditor i for company j in industry k.

For each big auditor, I rank the industries audited in descending order based on their auditor portfolio share. The top industries that constitute over 50% of the auditor's total audit fees are classified as industries that the big auditor specializes in. Measuring auditor industry expertise according to auditor portfolio share assumes that auditors develop industry expertise and become specialists in industries in which they earn most of their audit fees. Neal and Riley (2004) argue that classification of specialist auditors according to auditor portfolio share is affected by the size of companies in an industry. Auditors are more likely to be classified as

specialists in industries with many large companies because the high audit fees for these companies increase the auditors' portfolio shares in such industries. Thus, both the industry market share approach and the auditor portfolio share approach have their own set of limitations.

Together, there are four measures of specialist auditors. *SPE1* is coded one if a company is audited by a national specialist auditor according to industry market share, and zero otherwise. *SPE2* is coded one if a company is audited by a city specialist auditor according to industry market share, and zero otherwise. *SPE3* is coded one if a company is audited by a national specialist auditor according to auditor portfolio share, and zero otherwise. *SPE4* is coded one if the company is audited by a city specialist auditor according to auditor portfolio share, and zero otherwise.

4.3 Research Design

4.3.1 Test of the Association between Financial Statement Footnote Disclosures and Specialist Auditors

Following Li (2008), I test H1, which relates the quantity of financial statement footnote disclosures to specialist auditors, using the following regression model:

$$FT = \beta_0 + \sum_{i=1}^{4} \beta_i SPEi + \beta_5 BIG4 + \beta_6 ROA + \beta_7 SIZE + \beta_8 MTB + \beta_9 AGE + \beta_{10} SPECIAL + \beta_{11} RET\_VOL + \beta_{12} EARN\_VOL + \beta_{13} NGSEG + \beta_{14} NBSEG + \beta_{15} NITEMS + \beta_{16} MA + \beta_{17} SEO + \varepsilon \quad (4.3)$$

where the dependent variable *FT* is either the quantitative (*FT_QUAN*) or qualitative (*FT_QUAL*) footnote disclosure measure. That is, I estimate Equation (4.3) separately with *FT_QUAN* and *FT_QUAL* as the dependent variable. The test variables of interest are the four

measures of specialist auditors (*SPE1* through *SPE4*). Based on H1, I expect β_1 through β_4 to be significantly positive.

Of the control variables, *BIG4* is coded one if a company is audited by a Big 4 (Big 5 prior to 2003) auditor, and zero otherwise. Liu and Lai (2012) find that compared to less complex companies, companies with more complex organizational structures are more likely to choose Big 4 auditors. Given that Big 4 auditors and specialist auditors are correlated, I include *BIG4* to mitigate the alternative explanation that the positive association between footnote disclosures and specialist auditors is attributable to the demand for Big 4 auditors. To control for potential variations in footnote disclosures over time and across industries, I include year dummies and industry dummies based on two-digit SIC codes.

In testing H1, I control for potential mechanical relations between financial statement complexity and measures of complexity in the prior literature, i.e., the number of segments. The remaining control variables, based on Li (2008), are measures of complexity identified in the prior literature that affect footnote disclosures. Because Li (2008) finds that companies with lower earnings have more qualitative financial statement footnote disclosures, I control for the return on assets, *ROA*, calculated as earnings before extraordinary items deflated by total assets. I control for *SIZE*, being the natural log of the market value of equity, because larger companies have more footnote disclosures to describe the complex environment they operate in. *NBSEG* is the natural log of the number of business segments, *NGSEG* the natural log of the number of geographic segments, and *NITEMS* the natural log of the number of non-missing items in financial statements. Li (2008) observes that companies with more segments and more non-missing items in financial statements have more footnote disclosures. Thus, I control for

NGSEG, *NBSEG*, and *NITEMS* in the model. Li (2008) also finds higher-growth companies to have fewer qualitative footnote disclosures. Market to book, *MTB*, is calculated as the market value of equity plus book value of liability and divided by the book value of total assets. *MTB* is included and expected to have a negative coefficient due to the high proprietary cost of disclosure for growth companies. Because older companies have less information asymmetry, they are expected to have fewer items to be disclosed in footnotes. I thus expect a negative coefficient on *AGE,* which is the number of years since a company's first appearance in the CRSP monthly stock return file. I include *SPECIAL*, the ratio of the amount of special items to the book value of total assets, to control for unusual events associated with a company. *RET_VOL* is the standard deviation of the monthly stock returns in the prior year, and *EARN_VOL* is the standard deviation of the operating earnings during the prior five fiscal years. I include *RET_VOL* and *EARN_VOL* to control for the volatility of business operations. Because investors demand more information from companies with more than from companies with less volatile operations, I expect positive coefficients on *RET_VOL* and *EARN_VOL*. I include *MA* and *SEO* for mergers and acquisitions and seasoned equity offerings, respectively. *MA* equals one if the company appears in the SDC Platinum M&A database as an acquirer in the current year, and zero otherwise. *SEO* equals one if the company has a common stock equity offering in the secondary market according to the SDC Global New Issues database, and zero otherwise. M&As and SEOs require more detailed footnote disclosures and I therefore expect positive coefficients on these two variables. Finally, standard errors are adjusted for correlations across companies and over years (Peterson 2009).

4.3.2 Test of the Association between Financial Statement Footnote Disclosures and Audit Fees

To test the association between financial statement footnote disclosures and audit fees, I first follow the model of Francis et al. (2005) and include the four measures of specialist auditors. I then include the quantitative and qualitative footnote disclosure measures (*FT_QUAN* and *FT_QUAL*) and quantitative financial statement measure (*FS_QUAN*). To examine whether specialists charge higher audit fees per unit of footnote disclosure, I interact the quantitative and qualitative financial statement footnote disclosure measures with specialist auditors, thus:

$$AUDFEE = \beta_0 + \sum_{i=1}^{4} \beta_i SPEi + \beta_5 FT\_QUAN + \beta_6 FT\_QUAL + \sum_{i=1}^{4} \gamma_{1i} FT\_QUAN \times SPEi + \sum_{i=1}^{4} \gamma_{2i} FT\_QUAL \times SPEi + \beta_7 FS\_QUAN + \beta_8 BIG4 + \beta_9 Ln(AT) + \beta_{10} NBSEG + \beta_{11} LEV + \beta_{12} ROA + \beta_{13} CURRENT + \beta_{14} QUICK + \beta_{15} FOREIGN + \beta_{16} LOSS + \beta_{17} OPINION + \beta_{18} ACC + \beta_{19} DEC + \beta_{20} TREND + \varepsilon \quad (4.4)$$

where the dependent variable, *AUDFEE*, is the natural log of audit fees in dollars. The coefficients on the four measures of specialist auditors (*SPE1* through *SPE4*) capture the specialist audit fee premium. Based on Craswell et al. (1995) and Francis et al. (2005), I expect β_1 through β_4 to be positive. The test variables of interest are the two financial statement footnote disclosure measures, *FT_QUAN* and *FT_QUAL*. Based on H2a, I expect β_5 and β_6 to be significantly positive. After I include *FT_QUAN*, *FT_QUAL,* and *FS_QUAN*, based on H2b, I expect the coefficients on β_1 through β_4 to decrease. To test H2c, I interact the four measures of specialist auditors with the two financial statement footnote disclosure measures, respectively. I anticipate positive coefficients on γ_{11} through γ_{14} and γ_{21} through γ_{24}.

The definitions of control variables in the audit fee model are based on prior research; for example, Ferguson et al. (2003) and Francis et al. (2005). I include *Ln(AT)*, calculated as the natural log of total assets, because company size is the most important explanatory variable in the audit fee model, accounting for 60% of the variation in audit fees. Based on Simunic (1980), I expect a positive coefficient on *Ln(AT)*. *FOREIGN* is the proportion of total sales from foreign operations. I include *FOREIGN* and *NBSEG* to control for mechanical correlation between financial statement footnote disclosures and measures of complexity in the prior literature. *CURRENT*, calculated as current assets deflated by total assets, measures inherent risk. Simon and Francis (1988) argue that current assets such as inventory and accounts receivable, require special audit procedures. *QUICK* measures liquidity, calculated as current assets (less inventory) deflated by current liabilities. *LEV* is long-term debt deflated by total assets, and *LOSS* is coded one if a company reports a net loss in the current year, and zero otherwise. I include *ROA*, *CURRENT*, *QUICK*, *LEV*, and *LOSS* to control for risk. Because Simunic (1980) argues that audit fees are higher for more risky companies to cover the potential expected loss, I expect positive coefficients on *CURRENT*, *LEV*, and *LOSS*, and negative coefficients on *ROA* and *QUICK*. *OPINION* is coded one if a company receives a qualified audit opinion, and zero otherwise. Because qualified audit opinion is associated higher audit risk and consequently higher audit fees, the coefficient on *OPINION* is expected to be positive. *DEC* is coded one if the company has a December fiscal year end, and zero otherwise. Because auditors charge higher fees during peak season, I expect a positive coefficient on *DEC*.

In addition to the control variables in Francis et al. (2005), I include *FS_QUAN* to control for potential correlation between disclosures in footnotes and disclosures in financial statements.

Since auditors assure that the numerals in the financial statements are free of material misstatements, they devote greater effort to companies with more disclosures in the financial statements. I expect a positive coefficient on *FS_QUAN*. *BIG4* is included to control for the general Big 4 audit fee premium. Based on Francis (1984), I expect a positive coefficient on *BIG4*. *ACC* is coded one if a company is an accelerated filer, and zero otherwise. *ACC* is included to control for limits in time and additional effort required for accelerated filers. Hay et al. (2006) arguing that auditors charge accelerated filers higher fees, I expect a positive coefficient on *ACC*. Prior studies document that audit fees increase over time (Ghosh and Pawlewicz 2009; Charles et al. 2010). The GAO survey (2003) suggests that companies become more complex over time. As discussed earlier, more complex companies have more financial statement footnote disclosures compared to less complex companies. Because increases in audit fees and financial statement footnote disclosures over time could drive a spurious positive association between them, I include *TREND* to control for temporal changes in audit fees and financial statement footnote disclosures. Finally, I include year dummies and industry dummies based on two-digit SIC codes to control for variations in footnote disclosures over time and across industries. Standard errors are adjusted for correlation across companies and over years (Peterson 2009).

CHAPTER 5

EMPIRICAL RESULTS

5.1 Descriptive Statistics

Table E.1, Panel A presents the descriptive statistics for my final sample. To ensure that my results are not driven by extreme values, all continuous variables are winsorized at the 1st and 99th percentiles. The mean (median) quantitative financial statement footnote disclosure measure (*FT_QUAN*) is 6.40 (6.39), which translates to a mean (median) of 602 (596) Arabic numerals in footnotes. The mean (median) qualitative financial statement footnote disclosure measure (*FT_QUAL*) is 8.90 (8.92), which translates to a mean (median) of 7,332 (7,480) alphabetical words in footnotes. The mean qualitative financial statement footnote disclosure measure in my sample is comparable to the mean of 8.90 in Li (2008). The quantitative financial statement measure (*FS_QUAN*) has a mean (median) of 5.66 (5.67), which translates to a mean (median) of 287 (290) Arabic numerals in financial statements. Figure D.1 plots over the sample years the mean number of numerals in footnote disclosures, number of words in footnote disclosures, and number of numerals in financial statements. The number of words in financial statement footnote disclosures has increased dramatically over time, consistent with anecdotal evidence that companies have become increasingly complex (GAO 2003), the number of numerals in financial statements and footnote disclosures less so. The untabulated results find that companies in the tobacco product manufacturing industry (SIC code: 21) have the most qualitative footnote disclosures (*FT_QUAL*), followed by those in coal mining (SIC code: 12) and communication

industry (SIC code: 48); companies in coal mining industry (SIC code: 12) have the most quantitative footnote disclosures (*FT_QUAN*), followed by those in auto repair service and parking (SIC code: 75) and tobacco product manufacturing industry (SIC code: 21). Part of the financial statement footnote disclosures for companies in tobacco product manufacturing and coal mining industries are attributable to "Commitments and Contingencies"; part of the footnote disclosures for companies in communication and auto repair service and parking industries are attributable to "Goodwill and Intangible Assets".

The mean *SPE1* (*SPE2*) shows that 24% (51%) of the sample companies are classified as clients of national (city) market share-based specialist auditors. In comparison, the mean *SPE3* (*SPE4*) shows that 42% (37%) of the sample companies are classified as clients of national (city) portfolio share-based specialist auditors. The mean audit fee (*AUDFEE*), 13.13, translates to $503,833. The descriptive statistics for the control variables are consistent with those in Francis et al. (2005) and Li (2008).

Table E.1, Panel B shows separately the mean quantitative and qualitative footnote disclosure measures for companies audited by specialist auditors vis-à-vis companies audited by non-specialist auditors. The mean quantitative financial statement footnote disclosure measure (*FT_QUAN*) ranges from 6.38 to 6.53 for companies audited by specialist auditors and from 6.31 to 6.42 for companies audited by non-specialist auditors, the difference being statistically significant for all four measures of specialist auditors. The mean qualitative financial statement footnote disclosure measure (*FT_QUAL*) ranges from 8.95 to 9.00 for companies audited by specialist auditors and from 8.84 to 8.88 for companies audited by non-specialist auditors, the difference again being statistically significant for all four measures of specialist auditors.

Table E.2 presents the correlation matrix among the variables. The correlation coefficient between the quantitative financial statement footnote disclosure measure (*FT_QUAN*) and qualitative financial statement footnote disclosure measure (*FT_QUAL*) is 0.74, indicating that companies use both numerals and words in financial statement footnote disclosures. National industry market share-based specialist auditor (*SPE1*) is positively correlated with national auditor portfolio share-based specialist auditor (*SPE3*), and city industry market share-based specialist auditor (*SPE2*) is positively correlated with city auditor portfolio share-based specialist auditor (*SPE4*), with Pearson correlation coefficients of 0.13 and 0.23, respectively, significant at the 0.05 level. None of the correlation coefficients among the four measures of specialist auditors is greater than 0.3, suggesting that the four measures of specialist auditors capture different sets of specialist auditors.

The quantitative footnote disclosure measure (*FT_QUAN*) is significantly positively correlated with three of the four measures of specialist auditors (*SPE1*, *SPE2*, and *SPE4*), with Pearson correlation coefficients of 0.13, 0.21, and 0.12, respectively. The qualitative footnote disclosure measure (*FT_QUAL*) is significantly positively correlated with all four measures of specialist auditors (*SPE1*, *SPE2*, *SPE3*, and *SPE4*), with Pearson correlation coefficients of 0.10, 0.16, 0.08, and 0.16, respectively. The univariate results support H1, which posits that companies audited by specialist auditors are associated with more quantitative and qualitative financial statement footnote disclosures than those audited by non-specialist auditors. The Pearson correlation coefficients between audit fees (*AUDFEE*) and the quantitative and qualitative footnote disclosure measures (*FT_QUAN* and *FT_QUAL*) are 0.69 and 0.63, respectively, which

suggests, a positive association between financial statement footnote disclosures and audit fees, consistent with H2a.

5.2 Regression Results

5.2.1 Financial Statement Footnote Disclosures and Specialist Auditors

Table E.3 reports the results of the regression in Equation (4.3) for the test of H1. In Panel A, *FT_QUAN* is used as the dependent variable, in Panel B, *FT_QUAL*.

The first three columns in Panel A report the results of the reduced base model in Equation (4.3), with only *BIG4* and industry dummies and year dummies as the control variables. Columns I and II consider only one pair of specialist auditor measures based on industry market share or auditor portfolio share, respectively. Column III presents the results of regressing the quantitative footnote disclosure measure, *FT_QUAN*, on the four specialist measures. In Column III, the coefficients on the city specialist auditors according to industry market share and auditor portfolio share (*SPE2* and *SPE4*) are 0.067 (with a t-stat of 5.30) and 0.138 (with a t-stat of 11.61), respectively, and significant. The coefficient on *SPE1* is 0.062 (with a t-stat of 4.54). The insignificant coefficient on *SPE3* is consistent with the argument in prior research (see, for example, Ferguson et al. 2003) that auditor industry expertise is associated with audit offices rather than audit firms. The significantly positive coefficients on *SPE1*, *SPE2*, and *SPE4* support H1 that companies audited by specialist auditors are associated with more quantitative financial statement footnotes than those audited by non-specialist auditors. The results in Column III are consistent with those in Columns I and II, in which I regress the quantitative financial statement footnote disclosure measure on market share-based specialist auditors and portfolio share-based

specialist auditors separately. In Column IV, to control for other measures of complexity identified in the prior literature, I include the determinants of footnote disclosures in Li (2008). The coefficients on *SPE1*, *SPE2*, *SPE3*, and *SPE4* are 0.019 (with a t-stat of 1.81), 0.028 (with a t-stat of 2.92), -0.010 (with a t-stat of -0.90), and 0.029 (with a t-stat of 3.18), respectively. The significantly positive coefficients on *SPE1*, *SPE2*, and *SPE4* support H1. When *SPE1*, *SPE2*, *SPE3*, and *SPE4* all increase from 0 to 1, the quantitative footnote disclosure measure, *FT_QUAN*, increases by 0.066, which translates to a 6.82% difference in the number of Arabic numerals in financial statement footnote disclosures between companies audited by specialist auditors and those audited by non-specialist auditors. Overall, the results in Panel A support H1 that companies audited by specialist auditors have more Arabic numerals in financial statement footnote disclosures than those audited by non-specialist auditors. The results suggest that complex companies demand specialist auditors.

With respect to the control variables, in Column IV, the coefficient on *BIG4* is 0.072 and significantly positive, suggesting that companies audited by Big 4 auditors have more quantitative footnote disclosures than those audited by non-Big 4 auditors. Other control variables, with the exception of *AGE* and *EARN_VOL*, are in the expected directions. Consistent with Li (2008), larger companies and companies with more volatile business, more operational and geographical segments, and more M&A and SEO activities have more quantitative footnote disclosures.

Panel B reports the regression results using the qualitative footnote disclosure measure (*FT_QUAL*) as the dependent variable. As can be seen in Column III, the coefficients on the four measures of specialist auditors (*SPE1*, *SPE2*, *SPE3*, and *SPE4*) are 0.049 (with a t-stat of 3.99),

0.038 (with a t-stat of 3.40), 0.030 (with a t-stat of 2.26), and 0.140 (with a t-stat of 13.10), respectively. These significantly positive coefficients on the specialist auditors support H1 that companies audited by specialist auditors are associated with more qualitative financial statement footnote disclosures than those audited by non-specialist auditors. The results in Column III are consistent with those in Columns I and II, in which I regress the qualitative financial statement footnote disclosure measure on market share-based specialist auditors and portfolio share-based specialist auditors separately. Column IV of Panel B shows the regression results of Equation (4.3) with all control variables. The coefficients on the four measures of specialist auditors (*SPE1*, *SPE2*, *SPE3*, and *SPE4*) are 0.016 (with a t-stat of 1.57), 0.024 (with a t-stat of 2.54), 0.027 (with a t-stat of 2.50), and 0.051 (with a t-stat of 5.75), respectively. When *SPE1*, *SPE2*, *SPE3*, and *SPE4* all increase from 0 to 1, the qualitative footnote disclosure measure (*FT_QUAL*) increases by 0.118, which translates to a 12.52% difference in the number of alphabetical words in financial statement footnote disclosures between companies audited by specialist auditors and those audited by non-specialist auditors. Overall, the results in Columns I to IV of Panel B support the positive association between the qualitative footnote disclosure measure and specialist auditors.

As can be seen in Column IV of Panel B, the coefficients on the control variables except *SPECIAL* have the expected signs. Comparing the regression results between Column IV, Panel A and Column IV, Panel B, it can be seen that *AGE* and *EARN_VOL* have coefficients of different signs for the quantitative and qualitative footnote disclosure measures.

5.2.2 Financial Statement Footnote Disclosures and Audit Fees

Table E.4, Panel A reports the regression results of the audit fee model in Equation (4.4) for the tests of H2a and H2b. Column III of Panel A presents the results of regressing audit fees on the four specialist auditor measures. The coefficients on specialist auditors (*SPE1*, *SPE2*, *SPE3*, and *SPE4*) are 0.028 (with a t-stat of 1.86), 0.070 (with t-stat of 4.35), 0.051 (with t-stat of 2.82), and 0.170 (with t-stat of 12.22), respectively. The significantly positive coefficients on *SPE1* through *SPE4* support the findings in Craswell et al. (1995) and Francis et al. (2005) that audit fees are higher for companies audited by specialist than for those audited by non-specialist auditors. The results in Column III are consistent with those in Columns I and II, in which I regress audit fees on market share-based specialist auditors and portfolio share-based specialist auditors separately.

Column IV of Panel A presents the regression results of audit fees on the quantitative and qualitative financial statement footnote disclosure measures. The coefficients on *FT_QUAN* and *FT_QUAL* are 0.287 (with a t-stat of 8.38) and 0.351 (with a t-stat of 9.91), respectively, and significant at the 1% level. The significantly positive coefficients on *FT_QUAN* and *FT_QUAL* support H2a that audit fees are positively associated with the quantity of financial statement footnote disclosures. In terms of economic significance, setting other variables equal to their median values, when the quantitative footnote disclosure measure (*FT_QUAN*) increases from the 25th to the 75th percentile value, audit fee (*AUDFEE*) increases from 13.042 to 13.242, which translates to a 22% increase from $461,390 to $563,543; when the qualitative footnote disclosure measure (*FT_QUAL*) increases from the 25th to the 75th percentile value, audit fee (*AUDFEE*) increases from 13.012 to 13.253, which translates to a 27% increase from $447,754 to $569,776.

Column V of Panel A presents the results of regressing audit fees on financial statement footnote disclosures and specialist auditors. The coefficients on *FT_QUAN* and *FT_QUAL* are 0.291 (with a t-stat of 8.70) and 0.326 (with a t-stat of 9.78), respectively, and significant at the 1% level. The positive coefficients on *FT_QUAN* and *FT_QUAL* support, consistent with H2a, the positive association between audit fees and financial statement footnote disclosures. The coefficients on the two city specialist auditors (*SPE2* and *SPE4*) are 0.054 (with a t-stat of 3.41) and 0.150 (with a t-stat of 11.55), respectively, and significantly positive. The significantly positive coefficients on city specialist auditors indicate that auditor industry expertise is tied to audit offices. Comparing the adjusted R^2 from the audit fee model without and with financial statement footnote disclosures (Column III and Column V), I find that including *FT_QUAN*, *FT_QUAL*, and *FS_QUAN* in the model increases the adjusted R^2 by 2.5%, from 81.2% to 83.7%. The significant F statistics (F=193.06, $p<0.001$) suggest that financial statements and footnote disclosures have incremental explanatory power for the audit fee model beyond the existing determinants of audit fees.

Comparing the coefficients on specialist auditors obtained from the audit fee model without and with financial statement footnote disclosures (Column III and Column V), I find that after I include *FT_QUAN*, *FT_QUAL*, and *FS_QUAN* in the model, the coefficients on *SPE1*, *SPE2*, *SPE3*, and *SPE4* decrease from 0.028 to 0.023, 0.070 to 0.054, 0.051 to 0.028, and 0.170 to 0.150, respectively. Table E.4, Panel B compares the coefficients on specialist auditors from the audit fee model without and with financial statement footnote disclosures. The t statistics show that except *SPE1*, the coefficients on *SPEi* in Column III of Panel A are significantly different from the coefficients on *SPEi* in Column V of Panel A (for *i*=2 to 4, respectively).

Table E.4, Panel C reports the differential specialist audit fee premium estimates from the audit fee model without and with footnote disclosures. Following Craswell et al. (1995), specialist audit fee premium is defined as the percentage effect of the intercept shift on audit fees in dollars, calculated as e^z-1, where z is the coefficient estimate on specialist auditor dummy (*SPEi*, for *i*=1, 2, 3, and 4). In the audit fee model without footnote disclosures (Column III of Panel A), when *SPE1*, *SPE2*, *SPE3*, and *SPE4* all increase from 0 to 1, *AUDFEE* increases by 0.319, which translates to a specialist audit fee premium of 37.58%; in the audit fee model with footnote disclosures (Column V of Panel A), when *SPE1*, *SPE2*, *SPE3*, and *SPE4* all increase from 0 to 1, *AUDFEE* increases by 0.255, which translates to a specialist audit fee premium of 29.05%. The results show that the specialist audit fee premium decreases by 22.69% after I add financial statement footnote disclosures in the model. The decrease in the coefficients on specialist auditors supports H2b that the specialist audit fee premium is partly attributable to financial statement footnote disclosures.

As can be seen in Column III of Panel D, when interaction terms between the quantitative and qualitative financial statement footnote disclosure measures with specialist auditors are included, the coefficients on *FT_QUAN* and *FT_QUAL* remain significantly positive. The coefficients on *FT_QUAN*×*SPE2* and *FT_QUAN*×*SPE4* are 0.080 (with a t-stat of 2.15) and 0.124 (with a t-stat of 3.31), respectively. The coefficients on the interaction terms between qualitative footnote disclosures and specialist auditors are positive, as expected, though insignificant. The significantly positive coefficients on *FT_QUAN*×*SPE2* and *FT_QUAN*×*SPE4* support H2c that compared to non-specialist auditors, specialist auditors charge higher audit fees for the same quantity of footnote disclosures. In terms of economic significance, holding other

variables at their median values, when both the quantitative and qualitative footnote disclosure measures are at the 25th percentile value, *AUDFEE* is 12.84 for companies audited by specialists and 13.24 for those audited by non-specialists, a difference of 0.40 in *AUDFEE* translating to a specialist audit fee premium of 49.18%; when both the quantitative and qualitative footnote disclosure measures are at the 75th percentile value, *AUDFEE* is 13.22 for companies audited by specialists and 13.80 for those audited by non-specialists, a difference of 0.58 in *AUDFEE* translating to a specialist audit fee premium of 78.60%.[12] Thus, the results show that specialist auditors charge higher audit fee premiums for companies with more financial statement footnote disclosures. The results in Column III of Panel D are consistent with those in Columns I and II, in which I include interaction terms of financial statement footnote disclosures with industry market share-based specialist auditors and auditor portfolio share-based specialist auditors separately. Overall, the results in Table E.4, Panel D support H2c that compared to non-specialist auditors, specialist auditors charge an audit fee premium per unit of footnote disclosure.

The control variables in Equation (4.4) are significant in the expected direction in Panel A and Panel D of Table E.4.

[12] Because the audit fee model includes interaction between specialist auditors and footnote disclosures, the difference in *AUDFEE* between companies audited by specialists and those audited by non-specialists (intercept shift z) is the sum of the coefficients on the four specialist dummies, and sum of the coefficients on interactions multiplied by the corresponding values of footnote disclosure measures. Following Craswell et al. (1995), specialist audit fee premium is calculated as e^{z}-1.

5.3 Robustness Tests

5.3.1 Control for Unobservable Company Characteristics

The model in Equation (4.3) fails to control for all company characteristics. To address the concern that company characteristics related to financial statement footnote disclosures and specialist auditors could lead to a spurious positive association between financial statement footnote disclosures and specialist auditors, I include the qualitative footnote disclosure measure (*FT_QUAL*) in the regression of the quantitative footnote disclosure measure (*FT_QUAN*) as the dependent variable, and vice versa. The quantitative and qualitative footnote disclosure measures are highly correlated and jointly determined by company characteristics. I further add *FS_QUAN* to control for the potential mechanical correlation between footnote disclosures and financial statements.

Table E.5, Panel A presents the regression results of including *FT_QUAL* and *FS_QUAN* in the regression of *FT_QUAN*. As can be seen in Column III, the coefficients on *SPE2* and *SPE4* are 0.016 (with a t-stat of 2.27) and 0.017 (with a t-stat of 2.80), respectively, and significant. The coefficient on *SPE1* is 0.015 and marginally significant, the coefficient on *SPE3* insignificant. The results in Column III are consistent with those in Columns I and II, in which I include the industry market share-based specialists and auditor portfolio share-based specialists in the regression separately.

Similarly, Table E.5, Panel B presents the regression results of including *FT_QUAN* and *FS_QUAN* in the regression of *FT_QUAL*. The coefficients on the four specialist auditor indicators, *SPE1*, *SPE2*, *SPE3*, and *SPE4*, are 0.004, 0.016, 0.034, and 0.033, respectively. The coefficients on the four specialist auditor measures, excepting S*PE1*, are significantly positive.

The results in Column III are consistent with those in Columns I and II, in which I include the industry market share-based specialists and auditor portfolio share-based specialists in the regression separately. The positive coefficients on specialist auditors in Table E.5 show that the positive association between quantitative and qualitative financial statement footnote disclosures and specialist auditors is not driven by unobservable company characteristics, supporting H1.

5.3.2 Control for Management Disclosure Incentives

Dunn and Mayhew (2004) argue that providing high-quality disclosure is a likely factor for companies to hire specialist auditors. Consistent with their argument, they document a positive association between specialist auditors and analysts' rankings of annual disclosure quality. Financial statement footnote disclosures are an important part of a company's annual public disclosures. Thus, the positive association between financial statement footnote disclosures and specialist auditors could be attributable to managers' intent to provide high-quality disclosures. To mitigate this alternative explanation, I add the natural log of the number of management forecasts plus one (*Ln(FORECAST)*) in Equation (4.3) to control for managers' disclosure intent. Table E.6 presents the results.

The results in Table E.6 are qualitatively the same as those in Table E.3. In Column III of Panel A in Table E.6, where *FT_QUAN* is the dependent variable, the coefficients on *SPE1*, *SPE2*, and *SPE4* are 0.019, 0.028, and 0.030, respectively, and significantly positive. The coefficient on *Ln(FORECAST)* is 0.023 (with a t-stat of 2.60). This significantly positive coefficient on *Ln(FORECAST)* supports the finding in Dunn and Mayhew (2004) that companies audited by specialist auditors are associated with better disclosures. In Column III of Panel B, where *FT_QUAL* is the dependent variable, the coefficients on *SPE1*, *SPE2*, *SPE3*, and *SPE4* are

0.016, 0.024, 0.027, and 0.051, respectively. Overall, the results in Table E.6 show that, after controlling for managers' disclosure intentions and other determinants of footnotes, companies audited by specialist auditors have more quantitative and qualitative financial statement footnote disclosures compared to those audited by non-specialist auditors, which supports H1.

5.3.3 Alternative Measure of Specialist Auditors

Measures of industry specialist auditors in Chapter 4, Section 4.2.2 are based on industry market share or auditor portfolio share in terms of audit fees, so the numerator of both measures is the total audit fees an auditor earns from a two-digit SIC industry. Including audit fees for a particular company, the dependent variable in the audit fee model (4.4), in the numerator of the measure of specialist auditors could lead to a spurious positive correlation between specialist auditors and audit fees. To mitigate this alternative explanation, following Krishnan (2003), I compute industry market share and auditor portfolio share based on the total sales of the companies audited. At each level, that is, national and city, I reclassify specialist auditors according to industry market share or auditor portfolio share based on company sales.

Table E.7 presents the regression results using measures of specialist auditors based on company sales. As Column V of Panel A shows, the coefficients on *SPE2* and *SPE4* are 0.027 (with a t-stat of 2.16) and 0.143 (with a t-stat of 4.33), respectively. The significantly positive coefficients on *SPE2* and *SPE4* show that relative to non-specialist auditors, city specialist auditors charge an audit fee premium. Panel B presents the regression results of the audit fee model with interaction terms between footnote disclosures and specialist auditors. As can be seen in Column III of Panel B, the coefficients on *FT_QUAN*×*SPE2* and *FT_QUAN*×*SPE4* are 0.093 (with a t-stat of 3.09) and 0.093 (with a t-stat of 2.20), respectively. Overall, the results in Table

E.7 are qualitatively the same as those in Table E.4, indicating that the specialist audit fee premium is not driven by the mechanical relation between audit fees and measures of specialist auditors.

5.4 Additional Analyses

5.4.1 Auditor Selection and Changes in Financial Statement Footnote Disclosures

Financial statement footnote disclosures (a proxy for financial statement complexity) are subject to exogenous shock such as management turnover. Dhaliwal et al. (2013) find that managers influence the appointment of external auditors (see also Lennox and Park 2007), which suggests that management turnover is associated with auditor turnover. Using the subsample observations that experienced auditor turnover, I examine the specialization of outgoing and incoming auditors, and compare their quantitative and qualitative financial statement footnote disclosures.

Of the subsample of 1,635 observations that experienced auditor turnover, 286 (239) companies switched from non-specialist (specialist) auditors to city, auditor portfolio share-based specialist (non-specialist) auditors. The mean (median) change in the quantitative financial statement footnote disclosure measure (*FT_QUAN*) is 0.09 (0.06) for companies that switched from non-specialist to specialist auditors, and 0.04 (0.05) for companies that switched from specialist to non-specialist auditors, the difference being statistically significant. The mean (median) change in the qualitative financial statement footnote disclosure measure (*FT_QUAL*) is 0.14 (0.12) for companies that switched from non-specialist to specialist auditors, and 0.09 (0.10) for companies that switched from specialist to non-specialist auditors, the difference again

being statistically significant. Finally, I regress the change in financial statement footnote disclosures on the change in the specialist auditor dummy and change in other control variables for this subsample. In untabulated results, the coefficients on the change in city, auditor portfolio share-based specialist auditors (*SPE4*) are significantly positive for the quantitative and qualitative footnote disclosure changes. These results suggest that when companies become more complex, they are more likely to turn to specialist auditors.

5.4.2 Financial Statement Footnote Disclosures and Audit Report Lag

To test the relation between audit report lag and financial statement footnote disclosures, I follow the model of Krishnan and Yang (2009) and include the quantitative and qualitative footnote disclosure measures (*FT_QUAN* and *FT_QUAL*) and quantitative financial statement measure (*FS_QUAN*). To examine whether this relation differs between companies audited by specialist and companies audited by non-specialist auditors, I include, and interact with the quantitative and qualitative financial statement footnote disclosure measures, the four measures of specialist auditors:

$$REPLAG = \beta_0 + \sum_{i=1}^{4} \beta_i SPEi + \beta_5 FT\_QUAN + \beta_6 FT\_QUAL + \sum_{i=1}^{4} \gamma_{1i} FT\_QUAN \times SPEi + \sum_{i=1}^{4} \gamma_{2i} FT\_QUAL \times SPEi + \beta_7 FS\_QUAN + \beta_8 BIG4 + \beta_9 EXTRA + \beta_{10} NBSEG + \beta_{11} FORERIGN + \beta_{12} LIT + \beta_{13} GROWTH + \beta_{14} TECH + \beta_{15} ZSCORE + \beta_{16} LOSS + \beta_{17} GC + \beta_{18} Ln(AT) + \beta_{19} ACC + \beta_{20} DEC + \beta_{21} TREND + \varepsilon \quad (5.1)$$

where the dependent variable *REPLAG* is the natural log of the number of days from the fiscal year end to the audit report date. Knechel and Payne (2001) document a positive relation

between audit report lag and audit hours, the latter measuring audit effort. Thus, I use audit report lag to measure audit effort.

The test variables of interest are *FT_QUAN* and *FT_QUAL*. Based on the argument that auditing more complex companies requires more audit effort (O'Keefe et al. 1994), I expect β_5 and β_6 to be positive. Audit firms with industry specialization have the staff capacity to assign more auditors with industry expertise to auditing complex companies, which reduces the amount of time on per unit of footnote disclosure. I thus expect negative coefficients on γ_{11} through γ_{14} and γ_{21} through γ_{24}.

The control variables closely follow Krishnan and Yang (2009). *EXTRA* is coded one for companies that report extraordinary items, and zero otherwise. To capture the additional financial statement complexity measured by financial statement footnote disclosures, I include in the model measures of complexity identified in the prior literature (*EXTRA*, *FOREIGN*, and *NBSEG*). Because different industries have different accounting and auditing standards and consequently require different amounts of audit effort, I add the dummy variables *LIT* for high litigation industries, *GROWTH* for high growth industries, and *TECH* for high tech industries to control for variation in audit effort across industries. *ZSCORE* is the probability of bankruptcy, estimated from Zmijewski's (1984) model. *GC* is a dummy that equals one if a company receives a going concern opinion, and zero otherwise. I include *ZSCORE*, *LOSS*, and *GC* to control for the additional audit effort for financially distressed companies. I also control for company size (*Ln(AT)*), audit firm size (*BIG4*), and fiscal year end (*DEC*). Year dummies are included to control for the decrease in 10-K filing period mandated by the SEC. In addition, I include *TREND* in the regression to control for temporal changes in report lag and footnote disclosures.

Industry dummies based on two-digit SIC codes are included to control for cross-industry variation in report lag. Standard errors are adjusted for correlation across firms and over time (Peterson 2009).

Table E.8, Column I presents the regression results of including *FT_QUAN* and *FT_QUAL* in Equation (5.1). As expected, the coefficients on *FT_QUAN* and *FT_QUAL* are 0.022 (with a t-stat of 2.13) and 0.113 (with a t-stat of 6.28), respectively, and statistically significant. The significantly positive coefficients on *FT_QUAN* and *FT_QUAL* support my argument in H2a, that auditors spend more effort on complex companies with more financial statement footnote disclosures. Table E.8, Column II shows the regression results after adding, and interacting with the quantitative and qualitative financial statement footnote disclosure measures, the four specialist auditor dummies. The coefficients on *FT_QUAN*×*SPE2* and *FT_QUAL*×*SPE4* are -0.021 (with a t-stat of -1.85) and -0.024 (with a t-stat of -2.44), respectively. The results indicate that specialist auditors spend less time than non-specialist auditors auditing per unit of footnote disclosure.

5.4.3 Factor Analysis of Complexity

As discussed earlier, measures of complexity used in prior literature are related to financial statement complexity (see Li 2008). I employ factor analysis to isolate the underlying construct common to all complexity measures. I construct the factor score from the following seven complexity variables: quantitative footnote disclosure measure (*FT_QUAN*); qualitative footnote disclosure measure (*FT_QUAL*); quantitative financial statement measure (*FS_QUAN*); log of the number of geographical segments (*NGSEG*); log of the number of business segments

(*NBSEG*); log of the number of nonzero items (*NITEMS*); and the proportion of foreign to total sales (*FOREIGN*).

Table E.9 presents the results of the common factor analysis of complexity. Panel A reports the eigen values of the correlation matrix of the seven complexity measures. The first two eigen values are greater than one, suggesting that two common factors can well explain the inter-correlations between the complexity measures. Panel B reports the standardized scoring coefficients from regression. The coefficients on the two financial statement footnote disclosure measures (*FT_QUAN* and *FT_QUAL*) are 0.366 and 0.436, respectively; in contrast, the coefficients on measures of complexity in the prior literature (*NBSEG*, *NGSEG*, and *FOREIGN*) are 0.053, -0.165, and -0.141, respectively. *FACTOR1* loads heavily on financial statement footnote disclosure measures, suggesting that financial statement footnote disclosures capture an additional dimension of complexity that was not captured by measures of complexity used in the prior literature.

Panel C of Table E.9 presents the regression results of *FACTOR1* on specialist auditors. In Column IV, the coefficients on *SPE1*, *SPE2*, *SPE3*, and *SPE4* are 0.005, 0.034, 0.016, and 0.026, respectively. The significantly positive coefficients on the two city specialist auditors (*SPE2* and *SPE4*) suggest that, consistent with H1, companies audited by specialist auditors are associated with more complex transactions than those audited by non-specialist auditors. Panel D presents the results for the audit fee model with *FACTOR1*. The coefficient on *FACTOR1* is 0.221 (with a t-stat of 16.58), which suggests a positive association between audit fees and a company's financial statement complexity.

CHAPTER 6

CONCLUSIONS

This paper examines the relations between financial statement complexity and specialist auditors and between financial statement complexity and the specialist audit fee premium. Using quantity of financial statement footnote disclosures to measure financial statement complexity, I find that companies audited by specialist auditors are associated with greater numbers of quantitative and qualitative footnote disclosures than those audited by non-specialist auditors, which indicates that complex companies are more likely to choose industry specialist auditors for their expertise. In addition, audit fees are positively associated with quantitative and qualitative footnote disclosure measures, and about 20% of the specialist audit fee premium is attributable to financial statement footnote disclosures. The results suggest that footnote disclosures are an important correlated omitted variable in the audit fee model, and that the specialist audit fee premium is attributable, in part, to financial statement complexity. Finally, specialist auditors, relative to non-specialist auditors, charge an audit fee premium for the same quantity of financial statement footnote disclosures. Collectively, the results provide a direct rationale for the demand for specialist auditors and for the audit fee premium charged by specialist auditors.

The focus of the paper is on how the quantity of financial statement footnote disclosures is associated with audit fees. Numerous studies have examined disclosure quality and its relation to firms' future performance and litigation risk, both of which influence audit fees. A possible extension of this paper would be to consider how qualitative characteristics of financial

statement footnote disclosures, such as tone and readability, are related to audit fees. Because auditors are required to review the Management Discussion and Analysis (MD&A) section, I also intend to examine whether the MD&A disclosures are related to audit fees.

APPENDIX A

MEASURING FINANCIAL STATEMENTS AND FOOTNOTE DISCLOSURES

1. Remove HTML format tags from raw 10-K filings

I obtain from the 10-K Wizard 10-K filings in HTML format between fiscal year 2000 to 2009. The HTML files are converted to ASCII-code text files.[13] Following Li (2008), I delete the lines between <SEC-HEADER> and <\SEC-HEADER> to exclude SEC-header information. All the tags in the format of <...> and <&...> are then replaced with blanks.

2. Extract financial statements

Financial statements include balance sheet, income statement, statement of cash flow, and statement of changes in shareholders' equity. I run the Perl program within the remaining text to identify the beginning and ending of the four financial statements, respectively.

The *beginning* of the balance sheet is tagged if any line satisfies *all* the following criteria: (1) the line starts with some white space followed by one of the following keywords:[14] "(Consolidated) Balance Sheet(s)", "Statement(s) of (Financial) Condition", "Statement(s) of Financial Position";[15] (2) the line does not contain symbols ".", ",", or ":"; and (3) the line does not contain numerals or it contains numerals between 1 and 31 together with month (e.g., January).

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[13]I thank Sunay Mutlu for converting HTML files into ASCII-code text files.

[14]The keywords within the quotation marks to identify the beginning of any financial statement are either case-sensitive as listed or all capitalized.

[15]The keywords within the parentheses can be omitted.

The *ending* of the balance sheet is tagged if any line satisfies *one* of the following criteria: (1) the line contains "see accompany notes";[16] (2) the line contains "see notes to (the) (consolidated) financial statements"; (3) the line contains "the accompanying notes (to the (consolidated) financial statements) are an integral part"; (4) the line starts with some white spaces followed by "accompanying notes" or "notes to (the) (consolidated) financial statements"; or (5) any line marked as the beginning of one of the other three financial statements.

I then use the same code to identify the beginning and the ending of the other three financial statements. The keywords to identify the *beginning* of the other three financial statements are listed below:

Income statement: (Consolidated) Statement(s) of Income, Statement(s) of (Consolidated) Income, Statement(s) of (Consolidated) Earnings, Statement(s) of (Consolidated) Operation(s), (Consolidated) Income Statement(s)

Statement of shareholders' equity: (Consolidated) Statement(s) of Changes in (Common) Shareholders'/Stockholders'/Shareowners'/Stock Equity, (Consolidated) Statement(s) of Changes in (Consolidated) Net Assets

Statement of cash flow: (Consolidated) Statement(s) of (Consolidated) Cash Flow(s)

The keywords to identify the *ending* of the other three financial statements are the same as those to identify the ending of the balance sheet.

3. Extract financial statement footnote disclosures

[16]The keywords within the quotation marks to identity the ending of any financial statement are case-insensitive.

Within the remaining text from step 1, I use Li's (2008) criteria to identify the beginning and ending of financial statement footnote disclosures. Any line that satisfies *both* criteria is marked as the *beginning* of the footnotes: (1) the line starts with some white spaces followed by "Notes to" or "NOTES TO"; and (2) the line does not contain any numerals except when the numeral follows "for the years ended". Any line that satisfies *one* of the following criteria is marked as the *ending* of the footnotes: (1) the line contains "Change in and Disagreements with" or "Disagreements on Acc";[17] (2) the line contains "Exhibit Index" or "Index to Exhibits"; (3) the line contains "Directors and Officers"; (4) the line begins with "Schedule" and no other words; (5) the line contains "Assessment of Internal Control" or "Report on Internal Control"; (6) the line begins with "Summary of Selected Financial Data" or "Selected Financial Data"; or (7) the line begins with "Report(s) of Independent Registered Public Accounting Firm".

Footnote disclosures include tables (with headlines) and paragraphs. I use Li's (2008) criteria to distinguish tables from paragraphs. If any line in the extracted footnotes satisfies *either* criterion listed below, it is classified as a line in tables. Otherwise, the line is classified as a line in paragraphs. (1) The line lies between <TABLE> and <\TABLE>, or the line contains <S> or <C>; or (2) the line contains more than 50% of non-alphabetical characters (e.g., white spaces or numerals).

4. Count Arabic numerals and alphabetical words in the financial statements and footnotes

I compute two measures of footnote disclosures: qualitative and quantitative. The qualitative measure *FT_QUAL* is the natural log of the number of alphabetical words in the paragraphs from

[17]The keywords within the quotation marks to identify the ending of footnotes are either case-sensitive as listed or all capitalized.

extracted footnote disclosures. The Fathom package in Perl is applied to the paragraphs in the extracted footnote disclosures. The package can directly calculate the number of alphabetical words in the paragraphs.

The quantitative measure *FT_QUAN* is the natural log of the number of Arabic numerals in financial statement footnote disclosures. It is composed of two parts: Arabic numerals in paragraphs and Arabic numerals in tables. Arabic numerals in paragraphs are usually expressed in dollars or percentages. To count Arabic numerals expressed in dollars or percentages, following Huang et al. (2012), I count the numeric strings preceded or followed by the following words or symbols: dollar, dollars, percent, percentage, $, or %. To count Arabic numerals in tables, I count the numeric strings with commas or decimals. Following Blankespoor (2012) and Lundholm et al. (2012), I exclude Arabic numerals incorporated in years, dates, and item and regulation numbers by the following procedures. I exclude Arabic numerals in years by not counting 4-digit numeric strings without a comma; I exclude Arabic numerals in dates by excluding strings between 1 to 31 followed or preceded by a description of a month; I identify the month by key words "January" through "December"; I exclude Arabic numerals in item and regulation numbers by not counting numeric strings preceded by "note", "item", "SFAS", or "AFS".

The quantitative financial statement measure *FS_QUAN* is the natural log of the number of Arabic numerals in financial statements. I run the same Perl code as the one that calculates *FT_QUAN*.[18]

[18]Financial statements have only a few alphabetical words in headings. I do not compute the qualitative financial statement measure.

APPENDIX B

EXAMPLE FINANCIAL STATEMENT FOOTNOTE DISCLOSURE EXTRACT

1. Unrecognized items

Contingencies

OLYMPIC STEEL, INC., 2006 10-K [FT_QUAN: 6.01; FT_QUAL: 7.68]

Source: 10-K Wizard

The Company is party to various legal actions that it believes are ordinary in nature and incidental to the operation of its business. In the opinion of management, the outcome of the proceedings to which the Company is currently a party will not have a material adverse effect upon its operations or financial position.

In the normal course of business, the Company periodically enters into agreements that incorporate indemnification provisions. While the maximum amount to which the Company may be exposed under such agreements cannot be estimated, it is the opinion of management that these indemnifications are not expected to have a material adverse effect on the Company's results of operations or financial position.

PEABODY ENERGY CORPORATION, 2006 10-K [FT_QUAN: 7.49; FT_QUAL: 9.97]

Source: 10-K Wizard

Navajo Nation Litigation

On June 18, 1999, the Navajo Nation served three of the Company's subsidiaries, including Peabody Western Coal Company ("Peabody Western"), with a complaint that had been filed in the U.S. District Court for the District of Columbia. The Navajo Nation has alleged 16 claims, including Civil Racketeer Influenced and Corrupt Organizations Act ("RICO") violations and fraud. The complaint alleges that the defendants jointly participated in unlawful activity to obtain favorable coal lease amendments. The plaintiff is seeking various remedies including actual damages of at least $600 million, which could be trebled under the RICO counts, punitive damages of at least $1 billion, a determination that Peabody Western's two coal leases have terminated due to Peabody Western's breach of these leases and a reformation of these leases to adjust the royalty rate to 20%. Subsequently, the court allowed the Hopi Tribe to intervene in this lawsuit and the Hopi Tribe is also seeking unspecified actual damages, punitive damages and reformation of its coal lease. On March 4, 2003, the U.S. Supreme Court issued a ruling in a companion lawsuit involving the Navajo Nation and the United States rejecting the Navajo Nation's allegation that the United States breached its trust responsibilities to the Tribe in approving the coal lease amendments. On February 9, 2005, the U.S. District Court for the District of Columbia granted a consent motion to stay the litigation until further order of the court. Peabody Western, the Navajo Nation, the Hopi Tribe and the owners of the power plants served by the suspended Black Mesa mine and the Kayenta mine are in mediation with respect to this litigation and other business issues.

The outcome of this litigation, or the current mediation, is subject to numerous uncertainties. Based on the Company's evaluation of the issues and their potential impact, the amount of any future loss cannot be reasonably estimated. However, the Company believes this

matter is likely to be resolved without a material adverse effect on its financial condition, results of operations or cash flows.

Salt River Project Agricultural Improvement and Power District –Mine Closing and Retiree Health Care

Salt River Project and the other owners of the Navajo Generating Station filed a lawsuit on September 27, 1996, in the Superior Court of Maricopa County in Arizona seeking a declaratory judgment that certain costs relating to final reclamation, environmental monitoring work and mine decommissioning and costs primarily relating to retiree health care benefits are not recoverable by the Company's subsidiary, Peabody Western, under the terms of a coal supply agreement dated February 18, 1977. The contract expires in 2011. The trial court subsequently ruled that the mine decommissioning costs were subject to arbitration but that the retiree health care costs were not subject to arbitration. The Company has recorded a receivable for mine decommissioning costs of $76.8 million and $74.2 million included in "Investments and other assets" in the consolidated balance sheets as of December 31, 2006 and 2005, respectively.

The outcome of this litigation and arbitration is subject to numerous uncertainties. Based on the Company's evaluation of the issues and their potential impact, the amount of any future loss cannot be reasonably estimated. However, the Company believes this matter is likely to be resolved without a material adverse effect on its financial condition, results of operations or cash flows.

Gulf Power Company Litigation

On June 21, 2006, the Company's subsidiary filed a complaint in the U.S. District Court, Southern District of Illinois, seeking a declaratory judgment upholding its declaration of a

permanent force majeure under a coal supply agreement with Gulf Power Company. On June 22, 2006, Gulf Power Company filed a breach of contract lawsuit against the Company's subsidiary in the U.S. District Court, Northern District of Florida, contesting the force majeure declaration and seeking damages for alleged past and future tonnage shortfalls of nearly 5 million tons under the coal supply agreement, which would have expired on December 31, 2007. The parties have filed motions to determine which court will hear the lawsuits. On October 6, 2006, the Florida District Court stayed Gulf Power's lawsuit until the Illinois court decides whether it has jurisdiction.

The outcome of this litigation is subject to numerous uncertainties. Based on the Company's evaluation of the issues and their potential impact, the amount of any future loss cannot reasonably be estimated. However, the Company believes this matter is likely to be resolved without a material adverse effect on its financial condition, results of operations or cash flows.

2. Disaggregation of recognized items

Acquisition

OLYMPIC STEEL, INC., 2006 10-K [FT_QUAN: 6.01; FT_QUAL: 7.68]

Source: 10-K Wizard

Acquisition of Tinsley Group – PS&W, Inc.

In order to further expand value-added and fabrication capabilities, on June 2, 2006, the Company purchased all of the outstanding stock of Tinsley Group – PS&W, Inc. (PS&W) for a

final purchase price of $9.0 million, which includes $6.6 million of goodwill. The results of PS&W have been fully consolidated in the Company's financial results since June 2, 2006.

PS&W is a full service fabricating company that utilizes burning, forming, machining and painting to produce a wide variety of fabrications for large original equipment manufacturers of heavy construction equipment. PS&W was founded in 1990 and currently operates in two facilities in North Carolina.

SCHNITZER STEEL INDUSTRIES, INC., 2006 10-K [FT_QUAN: 6.69; FT_QUAL: 9.56]

Source: 10-K Wizard

GreenLeaf Acquisition

On September 30, 2005, the Company acquired GreenLeaf Auto Recyclers, LLC ("GreenLeaf"), five properties previously leased by GreenLeaf and certain GreenLeaf debt obligations. GreenLeaf is engaged in the business of auto dismantling and recycling and sells its products primarily to collision and mechanical repair shops. GreenLeaf currently operates in three wholesale sales and distribution offices and 15 commercial locations throughout the United States. The acquisition of GreenLeaf significantly expanded the Company's national presence in the business of auto dismantling and recycling. In addition, the acquisition enabled the Company to enter into the full service segment of the recycling auto parts market that services commercial customers.

Total purchase price for the GreenLeaf acquisition, including acquisition costs of $1 million, was $45 million, paid in cash. The purchase price of the GreenLeaf acquisition was allocated to tangible and identifiable intangible assets acquired and liabilities assumed based on

their respective fair values as estimated by management of the Company with the assistance of an independent appraiser. The excess of the aggregate purchase price over the fair values of the identifiable net assets acquired of $5 million was recognized as goodwill.

The following is a summary of the fair values, for the assets acquired and liabilities assumed on the date of the acquisition (in millions):

Inventory	$	20
Property, plant and equipment		19
Goodwill		5
Identifiable intangible assets		4
Other assets		21
Current liabilities		(11)
Environmental liabilities		(13)
Total purchase price	$	45

The acquisition of GreenLeaf was a stock purchase which included Federal net operating losses ("NOLs") of $15 million that will expire in the years 2022 through 2024 if not used before then. The Company's use of these NOLs is restricted under Federal income tax law to $1 million a year.

Regional Recycling Acquisition

On October 31, 2005, the Company purchased substantially all of the assets of Regional Recycling LLC ("Regional") for $69 million in cash, including a working capital adjustment of $3 million and acquisition costs of $500 thousand. Using the assets acquired from Regional, the Company operates nine Metals Recycling facilities located in the states of Georgia and Alabama, which process ferrous and nonferrous scrap metal without the use of shredders. The acquisition of Regional provided the Company with a presence in the growing market in the Southeastern

United States. In addition, the acquisition of Regional enhanced the Company's ability to service domestic, and eventually, export markets.

The purchase price in the Regional acquisition was allocated to tangible and identifiable intangible assets acquired and liabilities assumed based on their respective fair values as estimated by management of the Company with the assistance of an independent appraiser. The excess of the aggregate purchase price over the fair values of the identifiable net assets acquired of approximately $28 million was recognized as goodwill.

The following is a summary of the fair values as of October 31, 2005, for the assets acquired and liabilities assumed on the date of the acquisition (in millions):

Accounts Receivable	$	27
Inventory		5
Property, plant and equipment		18
Goodwill		28
Identifiable intangible assets		1
Other assets		5
Current liabilities		(7)
Environmental liabilities		(8)
Total purchase price	$	69

Summary of Acquisitions

The total aggregate goodwill recognized from the acquisitions in fiscal 2006 amounted to $115 million. In accordance with SFAS No. 142, "Goodwill and Other Intangible Assets" ("SFAS 142") goodwill is not amortized and will be tested for impairment at least annually. Goodwill recognized in connection with the HNC separation and termination, the Regional acquisition and the acquisition of minority interest in MRL is deductible for tax purposes,

whereas the goodwill recognized in connection with GreenLeaf is not. Payment of the consideration for the recently acquired businesses was funded by the Company's existing cash balances and credit facility net of the $37 million in cash received in the HNC separation and termination.

The following presents the details of identifiable intangible assets acquired and the unamortized value as of August 31, 2006:

	Life in Years	Fair Value Acquired	Accumulated Amortization	Intangibles, Net
Amortized intangible assets:				
HNC Divestiture:				
Schnitzer Global Exchange covenant not to	5	$ 2,320	$ (425)	$ 1,895
GreenLeaf:				
Leasehold interests	0.25 - 24	1,518	(84)	1,434
Tradename	20	972	(45)	927
Covenants not to compete	5	563	(103)	460
Supply contracts	5	906	(166)	740
Regional:				
Covenants not to compete	5	637	(106)	531
MRL:				
Covenants not to compete	5	3,153	(263)	2,890
Total		$ 10,069	$ (1,192)	$ 8,877

3. Alternative measurements of recognized items

Share-based compensation expense

REPROS THERAPEUTICS INC., 2006 10-K [FT_QUAN: 5.39; FT_QUAL: 8.14]

Source: 10-K Wizard

Prior to the adoption of SFAS 123(R) we recorded deferred compensation in equity for options issued "in the money" under APB Opinion No. 25. Due to the adoption of SFAS 123(R) on January 1, 2006, we reclassified $130,000 from deferred compensation to additional paid in capital.

Under the modified prospective application method, results for prior periods have not been restated to reflect the effects of implementing SFAS 123(R). The following pro forma information, as required by SFAS No. 148 "Accounting for Stock-Based Compensation-an Amendment to FAS 123", is presented for comparative purposes and illustrates the effect on our net loss and loss per share if we had applied the provisions of SFAS 123 (R) during the years ended 2005 and 2004 (in thousands, except for per share amounts):

	2005	2004
Net loss, as reported	$(7,391)	$(3,697)
Add: Stock-based employee compensation expense included in reported net income, net of related tax effects	89	156
Deduct: Total stock-based employee compensation expense determined under fair value based method for all awards, net of related tax effects	(746)	(457)
Pro forma net loss	$(8,048)	$(3,998)
Loss per share—		
Basic and diluted — as reported	$ (0.77)	$ (0.72)
Basic and diluted — pro forma	(0.83)	(0.78)

The fair value of each option grant was estimated on the date of grant using the Black-Scholes option-pricing model. The following weighted average assumptions were used for grants in 2006, 2005, and 2004, respectively: risk-free interest rates of 4.8%, 4.0%, and 3.5%; with no expected dividends; expected lives of 7.0, 5.8, and 6.4 years; expected volatility of 85%, 86%, and 88%. The weighted average fair value of options, all of which were granted at market for 2006, 2005 and 2004 was $6.49, $2.88 and $1.99, respectively.

BIOGEN IDEC INC., 2006 10-K [FT_QUAN: 7.42; FT_QUAL: 9.97]

Source: 10-K Wizard

For 2006, we recorded pre-tax share-based compensation expense of $126.8 million. The expense for the year is net of a cumulative effect pre-tax adjustment of $5.6 million, or $3.8 million after-tax, resulting from the application of an estimated forfeiture rate for prior period unvested restricted stock awards.

As a result of adopting SFAS 123(R) on January 1, 2006, our net income before taxes was $47.9 million lower than if we had continued to account for stock-based employee compensation under APB 25. Basic and diluted earnings per share were both lower by $0.14.

For 2006, share-based compensation expense reduced our results of operations as follows (in thousands except for earnings per share):

	Effect before Cumulative Effect of Accounting Change	Cumulative Effect of Accounting Change	Effect on Net Income
Income before income taxes	$ 132,357	$ (5,574)	$ 126,783
Tax effect	42,280	(1,795)	40,485
Net income	$ 90,077	$ (3,779)	$ 86,298
Basic earnings per share:	$ 0.27	$ (0.01)	$ 0.26
Diluted earnings per share:	$ 0.26	$ (0.01)	$ 0.25

Share-based compensation cost for the 2006 is as follows (in thousands):

	Stock Options & ESPP	Restricted Stock and Restricted Stock Units	Total
Research and development	$ 19,502	$ 33,323	$ 52,825
Selling, general and administrative	29,325	53,485	82,810
Total	$ 48,827	$ 86,808	$ 135,635

Pre-tax cumulative effect catch-up	5,574
Pre-tax effect of share-based compensation	$ 130,061
Capitalized share-based payment costs	3,278
Share-based compensation expense	$ 126,783

For 2006, we capitalized total costs of $3.3 million associated with share-based compensation costs to inventory and fixed assets. We did not capitalize share-based compensation cost in our pro forma footnotes under SFAS 123(R). For 2005, we recorded share-based compensation expense of approximately $36.9 million, which was due, principally, to expenses for restricted stock awards and performance-based restricted stock units.

4. Assumptions and estimates

Stock option grants

NU HORIZONS ELECTRONICS CORP., 2007 10-K [FT_QUAN: 6.13; FT_QUAL: 8.48]

Source: 10-K Wizard

The fair value of each option was estimated on the date of grant using the Black-Scholes method with the following weighted average assumptions.

	2007	2006	2005
Option Plans:			
Dividends	-	-	-
Expected term	2 - 7 years	2 - 7 years	2 -7 years
Risk free interest rate	4.0%	4.0%	2.7%
Volatility rate	55.6%	52.3%	37.5%

The following table shows the weighted average fair value of options using the fair value approach under SFAS 123:

	2007	2006	2005
Weighted average fair value of options granted during	$7.11	$3.89	$3.72

BIOGEN IDEC INC., 2006 10-K [FT_QUAN: 7.42; FT_QUAL: 9.97]

Source: 10-K Wizard

All stock option grants to employees are for a ten-year term and generally vest one-fourth per year over four years on the anniversary of the date of grant, provided the employee remains continuously employed with us. Stock option grants to directors are for ten-year terms and generally vest as follows: (i) grants made on the date of a director's initial election to our Board of Directors vest one-third per year over three years on the anniversary of the date of grant, and (ii) grants made for service on our Board of Directors vest on the first anniversary of the date of grant, provided in each case that the director continues to serve on our Board of Directors through the vesting date. Options granted under all plans are exercisable at a price per share not less than the fair market value of the underlying common stock on the date of grant. The estimated fair value of options, including the effect of estimated forfeitures, is recognized over the options' vesting periods. The fair value of the stock option grants awarded in

2006 was estimated as of the date of grant using a Black-Scholes option valuation model that uses the following weighted-average assumptions:

Expected dividend yield	0.0%
Expected stock price volatility	34.8%
Risk-free interest rate	4.4%
Expected option life in years	4.87
Per share grant-date fair value	$16.90

Expected volatility is based primarily upon implied volatility for our exchange-traded options and other factors, including historical volatility. After assessing all available information on either historical volatility, implied volatility, or both, we have concluded that a combination of both historical and implied volatility provides the best estimate of expected volatility. The

expected term of options granted is derived using assumed exercise rates based on historical exercise patterns and represents the period of time that options granted are expected to be outstanding. The risk-free interest rate used is determined by the market yield curve based upon risk-free interest rates established by the Federal Reserve, or non-coupon bonds that have maturities equal to the expected term. The dividend yield of zero is based upon the fact that we have not historically granted cash dividends, and do not expect to issue dividends in the foreseeable future. Stock options granted prior to January 1, 2006 were valued based on the grant date fair value of those awards, using the Black-Scholes option pricing model, as previously calculated for pro-forma disclosures under SFAS 123. For 2006, we recorded $43.6 million of stock compensation related to stock options.

A summary of stock option activity is presented in the following table (shares are in thousands):

	Shares		Weighted Average Exercise Price
Outstanding at December 31, 2003	43,523	$	35.01
Granted	7,054		46.27
Exercised	(12,263)		21.28
Cancelled	(3,191)		45.98
Outstanding at December 31, 2004	35,123	$	41.07
Granted	6,012		63.42
Exercised	(4,033)		25.45
Cancelled	(5,796)		50.01
Outstanding at December 31, 2005	31,306	$	45.71
Granted	1,928		45.18
Exercised	(4,725)		27.9
Cancelled	(3,403)		53.55
Outstanding at 2006	25,106	$	47.96

The total intrinsic values of options exercised in 2006 and 2005, were $92.5 million and $97.0 million, respectively. The aggregate intrinsic values of options outstanding at December 31, 2006 and 2005, were $30.9 million and ($14.1) million, respectively. The weighted average remaining contractual terms for options outstanding at December 31, 2006 and 2005 were 5.9 and 6.3 years, respectively.

Of the options outstanding, 21.8 million were exercisable at December 31, 2006. The exercisable options had a weighted-average exercise price of $48.66. The aggregate intrinsic value of options exercisable as of December 31, 2006 and 2005 was $11.6 million and ($35.0) million, respectively. The weighted average remaining contractual term for options outstanding and exercisable at December 31, 2006 and 2005 was 5.5 years and 6.0 years, respectively.

APPENDIX C

VARIABLE DEFINITIONS

Variable Name	Variable Definition
FT_QUAN	Natural log of the number of Arabic numerals in the footnotes.
FT_QUAL	Natural log of the number of alphabetical words in the footnotes.
FS_QUAN	Natural log of the number of Arabic numerals in the financial statements.
SPE1	An indicator variable equals one if a company is audited by a national specialist auditor according to industry market share, and zero otherwise.
SPE2	An indicator variable equals one if a company is audited by a city specialist auditor according to industry market share, and zero otherwise.
SPE3	An indicator variable equals one if a company is audited by a national specialist auditor according to auditor portfolio share, and zero otherwise.
SPE4	An indicator variable equals one if a company is audited by a city specialist auditor according to auditor portfolio share, and zero otherwise.
BIG4	An indicator variable equals one if the company is audited by a Big 4 (Big 5 prior to 2003) auditor, and zero otherwise.
AUDFEE	Natural log of audit fees in dollars.
ROA	The ratio of earnings before extraordinary items to total assets.
SIZE	Natural log of the market value of equity.
MTB	The market value of equity plus book value of liability and divided by the book value of total assets.
AGE	Number of years since a company's first appearance in the CRSP monthly stock return files.
SPECIAL	The amount of special items divided the book value of total assets.
RET_VOL	The standard deviation of the monthly stock returns in the prior year.
EARN_VOL	The standard deviation of the operating earnings during the prior five fiscal years.
NBSEG	Natural log of the number of business segments.
NGSEG	Natural log of the number of geographic segments.
NITEMS	Natural log of the number of non-missing items.
MA	An indicator variable equals one if a company appears in the SDC Platinum M&A database as an acquirer in year t, and zero otherwise.
SEO	An indicator variable equals one if a company has a common stock equity offering in the secondary market according to the SDC Global New Issues database, and zero otherwise.

Ln(AT)	Natural log of total assets.
LEV	The ratio of long-term debt to total assets.
CURRENT	The ratio of current assets to total assets.
QUICK	The ratio of current assets (less inventory) to current liabilities.
FOREIGN	The proportion of total sales from foreign operations.
LOSS	An indicator variable equals one if a company reports a net loss in the current year, and zero otherwise.
OPINION	An indicator variable equals one if a company receives qualified audit opinion, and zero otherwise.
ACC	An indicator variable equals one if a company is an accelerated filer, and zero otherwise.
DEC	An indicator variable equals one if a company has December fiscal year end, and zero otherwise.
REPLAG	Natural log of the number of days from fiscal year end to audit report date.
EXTRA	An indicator variable equals one if a company reports extraordinary items, and zero otherwise.
GROWTH	An indicator variable equals one if a company belongs to industries 35, 45, 48, 52, 57, 73, 78, and 80 (two-digit SIC code), and zero otherwise.
LIT	An indicator variable equals one if a company belongs to industries 28, 35, 36, 38, 60, 67, and 73 (two-digit SIC code), and zero otherwise.
TECH	An indicator variable equals one if a company belongs to industries 283, 284, 357, 366, 367, 371, 382, 384, and 737 (three-digit SIC code), and zero otherwise.
GC	An indicator variable equals one if a company receives a going concern opinion, and zero otherwise.
ZSCORE	Probability of bankruptcy estimated from Zmijewski's (1984) model.
Ln(FORECAST)	Natural log of the number of management forecasts made during the year plus one.
FACTOR1	Common factor score extracted from the seven measures of complexity.

APPENDIX D

FIGURE

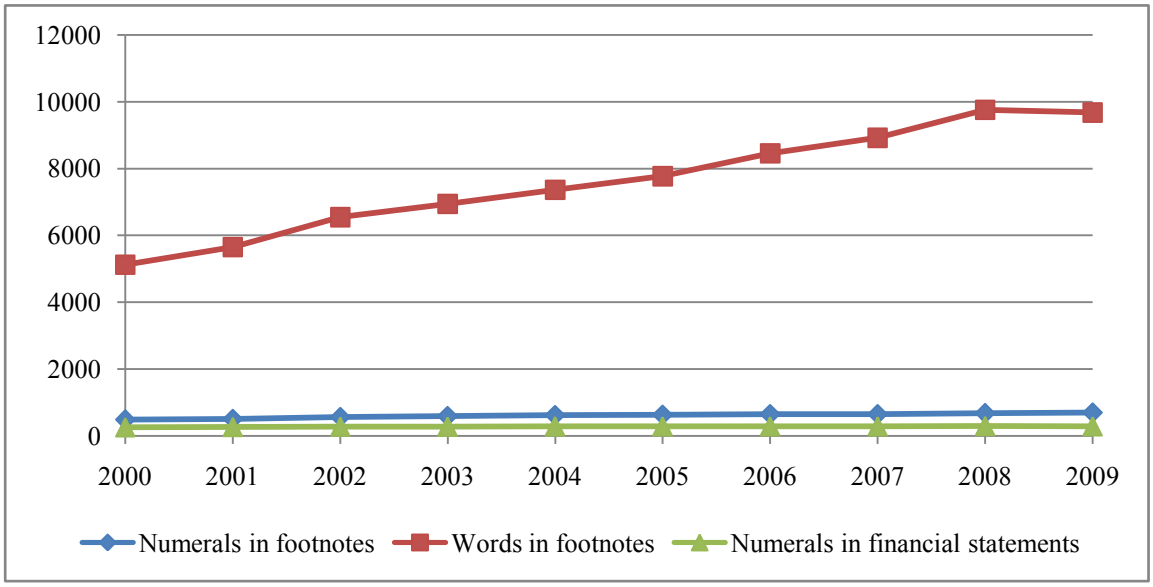

Figure D.1. Mean Number of Arabic Numerals and Alphabetical Words in Financial Statements and Footnote Disclosures by Year

APPENDIX E

TABLES

Table E.1. Descriptive Statistics

Panel A Descriptive statistics of full sample (N=26,199)

	Mean	Median	Std	1%	25%	75%	99%
FT_QUAN	6.40	6.39	0.53	4.92	6.06	6.75	7.59
FT_QUAL	8.90	8.92	0.50	7.61	8.56	9.25	9.97
FS_QUAN	5.66	5.67	0.41	4.23	5.48	5.83	7.05
SPE1	0.24	0	0.43	0	0	0	1
SPE2	0.51	1	0.50	0	0	1	1
SPE3	0.42	0	0.49	0	0	1	1
SPE4	0.37	0	0.48	0	0	1	1
BIG4	0.81	1	0.39	0	1	1	1
AUDFEE	13.13	13.06	1.29	10.57	12.13	14.02	16.38
ROA	-0.01	0.03	0.31	-1.37	-0.07	0.07	0.28
SIZE	5.68	5.71	2.04	1.25	4.25	7.03	10.84
MTB	2.02	1.50	1.60	0.53	1.09	2.30	10.20
AGE	14.83	10	14.85	0	5	20	76
SPECIAL	-0.03	0.00	0.09	-0.63	-0.02	0.00	0.10
RET_VOL	0.16	0.14	0.11	0.04	0.09	0.20	0.60
EARN_VOL	0.09	0.05	0.13	0.00	0.02	0.10	0.83
NGSEG	1.01	1.10	0.68	0	0.69	1.61	2.56
NBSEG	1.02	0.69	0.54	0	0.69	1.39	2.40
NITEMS	5.53	5.54	0.09	5.29	5.48	5.59	5.67
MA	0.34	0	0.47	0	0	1	1
SEO	0.09	0	0.28	0	0	0	1
Ln(AT)	5.79	5.69	1.84	1.89	4.52	6.99	10.48
LEV	0.15	0.10	0.17	0	0.00	0.26	0.66
CURRENT	0.50	0.51	0.24	0	0.32	0.68	0.97
QUICK	2.36	1.59	2.50	0	0.99	2.75	15.35
FOREIGN	0.14	0.00	0.24	0	0	0.17	0.95
LOSS	0.32	0	0.47	0	0	1	1
OPINION	0.03	0	0.02	0	0	0	0

Table E.1 Continued

Panel B Comparison of mean footnote disclosures between companies audited by specialist auditors and audited by non-specialist auditors

	FT_QUAN	*FT_QUAL*
SPE1		
Specialist (A: N=6,405)	6.53	8.99
Non-specialist (B: N=19,794)	6.36	8.87
Difference (A-B)	0.17***	0.12***
t-value (A-B=0)	22.39	16.71
SPE2		
Specialist (A: N=13,406)	6.49	8.95
Non-specialist (B: N=12,793)	6.31	8.84
Difference (A-B)	0.19***	0.11***
t-value (A-B=0)	29.53	17.30
SPE3		
Specialist (A: N=11,106)	6.38	8.95
Non-specialist (B: N=15,093)	6.42	8.88
Difference (A-B)	-0.04***	0.07***
t-value (A-B=0)	-5.90	10.52
SPE4		
Specialist (A: N=9,684)	6.47	9.00
Non-specialist (B: N=16,515)	6.36	8.84
Difference (A-B)	0.11***	0.16***
t-value (A-B=0)	16.51	25.09

Table E.1 presents the descriptive statistics. There are two panels: Panel A presents the descriptive statistics of the variables used in the tests for the full sample; Panel B compares the mean financial statement footnote disclosures between companies audited by specialist auditors and those by non-specialist auditors. All variables are defined in Appendix C. *** indicates that the variable means are significantly different across groups at the 1% level.

Table E.2. Correlations

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
FT_QUAN	(1)		**0.74**	**0.44**	**0.12**	**0.21**	**-0.04**	**0.12**	**0.25**	**0.70**	**0.12**	**0.53**	**-0.09**	**0.24**	**-0.13**	**-0.26**	**-0.35**	**0.29**	**0.34**	**0.37**
FT_QUAL	(2)	**0.74**		**0.43**	**0.10**	**0.16**	**0.07**	**0.16**	**0.14**	**0.64**	**-0.09**	**0.40**	**-0.02**	**0.03**	**-0.18**	**-0.09**	**-0.13**	**0.14**	**0.20**	**0.45**
FS_QUAN	(3)	**0.35**	**0.34**		**0.06**	**0.09**	**0.04**	**0.06**	**0.17**	**0.38**	**0.01**	**0.31**	**0.02**	**0.06**	**-0.09**	**-0.09**	**-0.14**	**0.10**	**0.15**	**0.22**
SPE1	(4)	**0.13**	**0.10**	**0.05**		**0.28**	**0.13**	**0.03**	**0.28**	**0.17**	**0.05**	**0.18**	**0.01**	**0.02**	**-0.02**	**-0.06**	**-0.08**	**0.02**	**0.08**	**0.03**
SPE2	(5)	**0.21**	**0.16**	**0.07**	**0.28**		**0.02**	**0.23**	**0.33**	**0.24**	**0.09**	**0.27**	**-0.01**	**0.06**	**-0.02**	**-0.11**	**-0.16**	**0.07**	**0.11**	**0.06**
SPE3	(6)	**-0.03**	**0.08**	**0.03**	**0.13**	**0.02**		**0.26**	0.02	0.01	**-0.16**	**-0.02**	**0.14**	**-0.08**	**-0.08**	**0.13**	**0.16**	**0.00**	**0.12**	**0.07**
SPE4	(7)	**0.12**	**0.16**	**0.03**	**0.03**	**0.23**	**0.26**		**0.10**	**0.18**	**-0.02**	**0.15**	**0.02**	**0.01**	**-0.02**	**0.02**	**0.02**	**0.03**	**0.14**	**0.07**
BIG4	(8)	**0.26**	**0.15**	**0.15**	**0.28**	**0.33**	0.02	**0.10**		**0.34**	**0.10**	**0.39**	**0.02**	0.00	**-0.05**	**-0.10**	**-0.18**	**0.16**	**0.07**	**-0.02**
AUDFEE	(9)	**0.69**	**0.63**	**0.30**	**0.17**	**0.28**	0.01	**0.18**	**0.34**		**0.21**	**0.70**	**0.01**	**0.23**	**-0.13**	**-0.35**	**-0.39**	**0.19**	**0.36**	**0.57**
ROA	(10)	**0.18**	**-0.04**	**0.02**	**0.12**	**0.05**	**0.13**	**-0.18**	**0.12**	**-0.03**		**0.44**	**0.24**	**0.24**	**0.34**	**-0.43**	**-0.37**	**0.13**	**0.09**	**0.09**
SIZE	(11)	**0.52**	**0.40**	**0.25**	**0.39**	**0.18**	**0.24**	**-0.04**	**0.39**	**0.11**	**0.36**		**0.35**	**0.19**	0.01	**-0.42**	**-0.40**	**0.27**	**0.14**	**0.28**
MTB	(12)	**-0.18**	**-0.07**	**-0.03**	**-0.05**	**-0.02**	**-0.07**	**0.15**	**-0.05**	**0.03**	**-0.22**	**0.18**		**-0.11**	**0.11**	**-0.06**	**0.20**	0.01	**-0.11**	**0.07**
AGE	(13)	**0.28**	**0.09**	**0.07**	**0.05**	**0.05**	**0.13**	**-0.09**	**0.05**	**0.02**	**0.20**	**0.29**	**-0.13**		**0.05**	**-0.32**	**-0.27**	**0.17**	**0.18**	**0.22**
SPECIAL	(14)	-0.01	**-0.10**	**-0.02**	**0.02**	**0.02**	**0.05**	**-0.09**	**0.02**	**-0.03**	**0.55**	**0.15**	**0.04**	**0.09**		**-0.13**	**-0.05**	**-0.11**	**-0.04**	**-0.13**
RET_VOL	(15)	**-0.21**	**-0.06**	**-0.05**	**-0.07**	**-0.05**	**-0.12**	**0.15**	**-0.07**	**0.03**	**-0.40**	**-0.37**	**0.09**	**-0.27**	**-0.23**		**0.47**	**-0.09**	**-0.13**	**-0.27**
EARN_VOL	(16)	**-0.26**	**-0.05**	**-0.06**	**-0.16**	**-0.08**	**-0.17**	**0.19**	**-0.16**	**0.05**	**-0.61**	**-0.31**	**0.36**	**-0.21**	**-0.18**	**0.37**		**-0.12**	**-0.19**	**-0.16**
NGSEG	(17)	**0.32**	**0.20**	**0.12**	**0.16**	**0.08**	**0.06**	**0.12**	**0.16**	**0.13**	**0.17**	**0.26**	**-0.07**	**0.18**	0.00	**-0.09**	**-0.15**		**0.17**	**0.24**
NBSEG	(18)	**0.27**	**0.14**	**0.07**	**0.07**	**0.02**	**0.08**	**-0.01**	**0.07**	**0.03**	**0.13**	**0.16**	**-0.13**	**0.20**	0.00	**-0.11**	**-0.16**	**0.18**		**0.06**
NITEMS	(19)	**0.35**	**0.44**	**0.16**	**-0.03**	**0.03**	**0.04**	**0.07**	**-0.03**	**0.07**	**0.08**	**0.28**	-0.02	**0.22**	**-0.04**	**-0.26**	**-0.11**	**0.23**	**0.06**	

Table E.2 presents the correlation matrix. The Pearson (Spearman) correlations are below (above) the diagonal. A correlation coefficient in bold face indicates that the correlation is statistically significant at 5% level. All variables are defined in Appendix C.

Table E.3. Financial Statement Footnote Disclosures and Specialist Auditors

Panel A Quantitative financial statement footnote disclosures and specialist auditors

	Dependent variable: *FT_QUAN*							
	I		II		III		IV	
	coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	5.966***	236.17	5.886***	221.44	5.898***	219.98	-1.282***	-3.80
SPE1	0.063***	4.64			0.062***	4.54	0.019*	1.81
SPE2	0.090***	7.20			0.067***	5.30	0.028***	2.92
SPE3			-0.017	-1.18	-0.024	-1.62	-0.010	-0.90
SPE4			0.151***	12.72	0.138***	11.61	0.029***	3.18
BIG4	0.336***	20.93	0.399***	26.20	0.361***	22.63	0.072***	5.51
ROA							-0.191***	-10.33
SIZE							0.109***	30.81
MTB							-0.068***	-22.10
AGE							0.002***	4.48
SPECIAL							-0.023	-0.57
RET_VOL							0.261***	7.27
EARN_VOL							-0.143***	-3.64
NGSEG							0.100***	12.11
NBSEG							0.121***	12.66
NITEMS							1.214***	19.61
MA							0.040***	5.71
SEO							0.019*	1.88
Industry dummy	yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes	
N	26,199		26,199		26,199		26,199	
Adj R square	0.207		0.215		0.221		0.463	

Table E.3 Continued

Panel B Qualitative financial statement footnote disclosures and specialist auditors

	Dependent variable: *FT_QUAL*							
	I		II		III		IV	
	coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	8.552***	346.37	8.439***	330.06	8.449***	328.35	-1.555***	-4.64
SPE1	0.059***	4.80			0.049***	3.99	0.016	1.57
SPE2	0.061***	5.32			0.038***	3.40	0.024**	2.54
SPE3			0.036***	2.74	0.030**	2.26	0.027**	2.50
SPE4			0.147***	13.89	0.140***	13.10	0.051***	5.75
BIG4	0.215***	14.31	0.271***	19.10	0.245***	16.43	0.034***	2.59
ROA							-0.331***	-18.00
SIZE							0.097***	28.65
MTB							-0.060***	-19.35
AGE							-0.002***	-4.42
SPECIAL							0.034	0.84
RET_VOL							0.559***	15.28
EARN_VOL							0.103***	2.78
NGSEG							0.055***	6.94
NBSEG							0.079***	8.66
NITEMS							1.736***	28.17
MA							0.035***	5.04
SEO							0.044***	4.60
Industry dummy	yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes	
N	26,199		26,199		26,199		26,199	
Adj R square	0.265		0.281		0.284		0.441	

Table E.3 presents the test results of the relation between financial statement footnote disclosures and specialist auditors. There are two panels: Panel A presents the OLS regression results of quantitative financial statement footnote disclosure measure on specialist auditors; Panel B presents the OLS regression results of qualitative financial statement footnote disclosure measure on specialist auditors. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.4. Financial Statement Footnote Disclosures and Audit Fees

Panel A Audit fee model without and with financial statement footnote disclosures

	Dependent variable: *AUDFEE*									
	I		II		III		IV		V	
	coef	t-value	coef	t-value	coef	t-value	coef	t-value	coef	t-value
Intercept	8.956***	73.90	8.820***	70.56	8.852***	71.52	4.560***	16.59	4.650***	17.35
SPE1	0.039***	2.71			0.028*	1.86			0.023	1.61
SPE2	0.107***	6.82			0.070***	4.35			0.054***	3.41
SPE3			0.056***	3.22	0.051***	2.82			0.028*	1.82
SPE4			0.183***	13.74	0.170***	12.22			0.150***	11.55
FT_QUAN							0.287***	8.38	0.291***	8.70
FT_QUAL							0.351***	9.91	0.326***	9.78
FS_QUAN							0.038**	2.49	0.044***	2.88
BIG4	0.349***	10.29	0.426***	12.46	0.401***	11.48	0.343***	9.18	0.361***	9.41
Ln(AT)	0.446***	61.47	0.442***	60.46	0.439***	61.00	0.374***	56.82	0.364***	56.01
NBSEG	0.139***	9.49	0.138***	9.66	0.137***	9.57	0.078***	5.96	0.076***	6.06
LEV	0.279***	5.57	0.306***	6.33	0.299***	6.36	0.089**	1.99	0.104**	2.52
ROA	-0.064**	-2.15	-0.053*	-1.86	-0.053*	-1.86	-0.076*	-1.83	-0.077**	-1.99
CURRENT	0.520***	10.75	0.516***	10.53	0.514***	10.59	0.592***	13.42	0.581***	13.37
QUICK	-0.048***	-13.55	-0.048***	-13.76	-0.048***	-13.68	-0.045***	-12.74	-0.044***	-12.85
FOREIGN	0.610***	20.54	0.586***	19.49	0.587***	19.48	0.497***	18.64	0.479***	17.75
LOSS	0.200***	9.21	0.191***	9.49	0.190***	9.52	0.137***	8.06	0.130***	8.44
OPINION	0.395***	4.94	0.330***	2.78	0.329***	2.65	0.365*	1.86	0.312	1.32
ACC	0.151***	3.39	0.147***	3.35	0.149***	3.38	0.111***	2.79	0.112***	2.83
DEC	0.085**	2.26	0.085**	2.26	0.085**	2.27	0.058	1.64	0.059*	1.68
TREND	0.147***	5.50	0.148***	5.57	0.148***	5.59	0.115***	5.00	0.117***	5.15
Industry dummy	yes		yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes		yes	
N	26,199		26,199		26,199		26,199		26,199	
Adj R square	0.808		0.811		0.812		0.833		0.837	
F test on *FT_QUAN, FT_QUAL, FS_QUAN*	F=193.06***									

Table E.4 Continued

Panel B Comparison of the coefficient estimates on specialist auditors in audit fee model without and with footnote disclosures

	Test
SPE1 Column III=*SPE1* Column V	t-value=0.85, p-value=0.39
SPE2 Column III=*SPE2* Column V	t-value=2.94, p-value=0.00
SPE3 Column III=*SPE3* Column V	t-value=3.62, p-value=0.00
SPE4 Column III=*SPE4* Column V	t-value=3.67, p-value=0.00

Panel C Economic difference in estimated specialist audit fee premium for audit fee model without and with footnote disclosures

	Without footnotes (e^{SPEi}-1, Column III)	With footnotes (e^{SPEi}-1, Column V)	Difference	Difference in percentage
SPE1	2.84%	2.32%	0.52%	18.31%
SPE2	7.25%	5.54%	1.71%	23.59%
SPE3	5.23%	2.84%	2.39%	45.70%
SPE4	18.53%	16.18%	2.65%	14.30%
SPE1-SPE4	37.58%	29.05%	8.53%	22.69%

Table E.4 Continued

Panel D Audit fee model with interactions between footnote disclosures and specialist auditors

	Dependent variable: *AUDFEE*					
	I		II		III	
	coef	t-value	coef	t-value	coef	t-value
Intercept	5.034***	17.32	4.823***	20.99	5.094***	20.62
SPE1	-0.209	-1.00			-0.484**	-2.36
SPE2	-0.674***	-3.46			-0.547***	-2.57
SPE3			0.154	0.64	0.149	0.64
SPE4			-0.384*	-1.77	-0.372	-1.59
FT_QUAN	0.221***	6.74	0.243***	7.86	0.234***	6.94
FT_QUAL	0.336***	8.76	0.332***	10.02	0.314***	9.77
FT_QUAN×SPE1	0.043	1.20			0.054	1.34
FT_QUAN×SPE2	0.064**	2.29			0.080**	2.15
FT_QUAN×SPE3			-0.054	-1.48	-0.034	-1.41
FT_QUAN×SPE4			0.135***	3.18	0.124***	3.13
FT_QUAL×SPE1	-0.002	-0.06			0.017	0.47
FT_QUAL×SPE2	0.035	1.25			0.009	0.23
FT_QUAL×SPE3			0.025	0.85	0.040	1.29
FT_QUAL×SPE4			-0.035	-1.19	-0.031	-0.97
FS_QUAN	0.049***	3.39	0.050***	3.41	0.051***	3.35
BIG4	0.336***	8.93	0.398***	10.32	0.370***	9.73
Ln(AT)	0.374***	58.53	0.369***	58.66	0.361***	53.61
NBSEG	0.077***	6.26	0.074***	6.22	0.075***	5.94
LEV	0.070*	1.75	0.093**	2.45	0.108***	2.64
ROA	-0.068*	-1.77	-0.078**	-2.15	-0.088**	-2.31
CURRENT	0.589***	12.57	0.578***	12.45	0.572***	11.00
QUICK	-0.045***	-12.60	-0.044***	-13.06	-0.044***	-13.36
FOREIGN	0.512***	19.60	0.493***	18.84	0.477***	18.37
LOSS	0.139***	8.37	0.132***	8.50	0.129***	8.56
OPINION	0.268	1.16	0.270	1.17	0.288	1.26
ACC	0.107***	2.68	0.103***	2.60	0.119***	3.03
DEC	0.064*	1.94	0.063*	1.92	0.057	1.66
TREND	0.113***	5.02	0.115***	5.14	0.117***	5.15
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	26,199		26,199		26,199	
Adj R square	0.829		0.832		0.838	

Table E.4 Continued

Table E.4 presents the test results of the relation between audit fees, specialist auditors, and financial statement footnote disclosures. There are four panels: Panel A presents the OLS regression results of audit fees on financial statement footnote disclosures and specialist auditors; Panel B compares the coefficients on specialist auditors in audit fee model without and with financial statement footnote disclosures; Panel C compares the economic difference in estimated specialist audit fee premium for audit fee model without and with financial statement footnote disclosures. Following Craswell et al. (1995), specialist audit fee premium is defined as the percentage effect of the intercept shift on audit fees in dollars, calculated as e^z-1, where z is the coefficient estimate on specialist auditors (*SPEi*, for *i*=1, 2, 3, and 4) in Panel A, Columns III and V, respectively; Panel D presents the OLS regression results of audit fees on interactions between financial statement footnote disclosures and specialist auditors. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.5. Financial Statement Footnote Disclosures and Specialist Auditors, Controlling for Unobservable Company Characteristics

Panel A Quantitative financial statement footnote disclosures and specialist auditors, controlling for unobservable company characteristics

	Dependent variable: *FT_QUAN*					
	I		II		III	
	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	-1.117**	-1.99	-1.129**	-2.05	-1.127**	-2.03
SPE1	0.014*	1.69			0.015*	1.75
SPE2	0.019***	2.69			0.016**	2.27
SPE3			-0.006	-0.76	-0.008	-0.97
SPE4			0.020***	3.24	0.017***	2.80
BIG4	0.048***	4.68	0.061***	5.77	0.053***	4.98
FT_QUAL	0.197***	17.40	0.197***	17.38	0.196***	17.42
FS_QUAN	0.152***	14.64	0.152***	14.73	0.152***	14.68
ROA	-0.093***	-3.58	-0.092***	-3.59	-0.091***	-3.51
SIZE	0.087***	15.15	0.087***	15.44	0.087***	15.05
MTB	-0.057***	-14.44	-0.057***	-14.60	-0.056***	-14.38
AGE	0.003***	6.15	0.003***	6.20	0.003***	6.21
SPECIAL	-0.055	-1.16	-0.054	-1.13	-0.057	-1.19
RET_VOL	0.092	1.13	0.089	1.08	0.090	1.10
EARN_VOL	-0.123***	-3.46	-0.128***	-3.59	-0.125***	-3.49
NGSEG	0.078***	11.90	0.077***	11.95	0.077***	11.95
NBSEG	0.107***	14.00	0.107***	14.04	0.106***	13.99
NITEMS	0.756***	7.28	0.757***	7.41	0.758***	7.38
MA	0.025***	4.36	0.025***	4.33	0.025***	4.39
SEO	0.013	0.92	0.012	0.88	0.013	0.93
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	26,199		26,199		26,199	
Adj R square	0.643		0.643		0.644	

Table E.5 Continued

Panel B Qualitative financial statement footnote disclosures and specialist auditors, controlling for unobservable company characteristics

	Dependent variable: *FT_QUAL*					
	I		II		III	
	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	-0.860	-0.55	-0.887	-0.56	- 0.887	-0.56
SPE1	0.010	1.34			0.004	0.60
SPE2	0.014*	1.80			0.016*	1.84
SPE3			0.034***	3.10	0.034***	3.02
SPE4			0.034***	4.81	0.033***	4.72
BIG4	0.018	1.62	0.013	1.08	0.015	1.29
FT_QUAN	0.640***	45.42	0.639***	45.35	0.639***	45.33
FS_QUAN	0.053***	7.89	0.054***	7.95	0.054***	8.01
ROA	-0.205***	-12.62	-0.202***	-12.78	-0.202***	-12.73
SIZE	0.026***	6.89	0.025***	6.48	0.025***	6.48
MTB	-0.015***	-7.17	-0.015***	-6.93	-0.015***	-6.89
AGE	-0.003***	-10.89	-0.003***	-10.56	-0.003***	-10.67
SPECIAL	0.043*	1.86	0.045**	1.96	0.044*	1.94
RET_VOL	0.395***	8.55	0.381***	8.42	0.381***	8.42
EARN_VOL	0.201***	5.15	0.194***	5.09	0.195***	5.10
NGSEG	-0.008	-1.19	-0.010	-1.63	-0.010	-1.60
NBSEG	0.000	0.06	0.000	0.04	0.000	0.03
NITEMS	0.936***	3.08	0.936***	3.05	0.937***	3.05
MA	0.008	1.60	0.007	1.41	0.007	1.42
SEO	0.031***	4.74	0.032***	4.74	0.032***	4.78
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	26,199		26,199		26,199	
Adj R square	0.686		0.688		0.699	

Table E.5 presents the test results of the relation between financial statement footnote disclosures and specialist auditors, after controlling for unobservable company characteristics. There are two panels: Panel A presents the OLS regression results of quantitative financial statement footnote disclosure measure on specialist auditors, after controlling for unobservable company characteristics; Panel B presents the OLS regression results of qualitative financial statement footnote disclosure measure on specialist auditors, after controlling for unobservable company characteristics. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.6. Financial Statement Footnote Disclosures and Specialist Auditors, Controlling for Management Disclosure Incentives

Panel A Quantitative financial statement footnote disclosures and specialist auditors, controlling for management disclosure incentives

	Dependent variable: *FT_QUAN*					
	I		II		III	
	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	-1.214*	-1.82	-1.227*	-1.88	-1.227*	-1.86
SPE1	0.017*	1.66			0.019*	1.72
SPE2	0.032***	3.67			0.028***	3.11
SPE3			-0.008	-0.67	-0.010	-0.79
SPE4			0.034***	4.62	0.030***	3.96
Ln(FORECAST)	0.023***	2.57	0.023***	2.60	0.023***	2.60
BIG4	0.064***	4.86	0.083***	6.54	0.072***	5.42
ROA	-0.196***	-6.81	-0.195***	-6.80	-0.193***	-6.71
SIZE	0.108***	16.03	0.108***	16.32	0.107***	15.96
MTB	-0.069***	-17.29	-0.068***	-17.38	-0.068***	-17.18
AGE	0.002***	3.43	0.002***	3.54	0.002***	3.49
SPECIAL	-0.016	-0.26	-0.015	-0.23	-0.018	-0.29
RET_VOL	0.272***	2.74	0.266***	2.62	0.268***	2.66
EARN_VOL	-0.139***	-3.35	-0.147***	-3.48	-0.142***	-3.39
NGSEG	0.102***	12.63	0.099***	12.57	0.100***	12.64
NBSEG	0.120***	12.21	0.120***	12.31	0.119***	12.18
NITEMS	1.204***	10.29	1.205***	10.55	1.206***	10.46
MA	0.038***	5.37	0.037***	5.33	0.038***	5.36
SEO	0.020	1.31	0.020	1.26	0.020	1.31
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	26,199		26,199		26,199	
Adj R square	0.463		0.463		0.463	

Table E.6 Continued

Panel B Qualitative financial statement footnote disclosures and specialist auditors, controlling for management disclosure incentives

	Dependent variable: *FT_QUAL*					
	I		II		III	
	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	-1.505	-1.06	-1.537	-1.07	-1.537	-1.07
SPE1	0.021**	1.99			0.016	1.49
SPE2	0.031***	3.59			0.024***	2.85
SPE3			0.029**	1.97	0.027*	1.78
SPE4			0.055***	6.54	0.051***	6.07
Ln(FORECAST)	0.007	0.78	0.008	0.86	0.008	0.84
BIG4	0.015	1.13	0.043***	3.16	0.034**	2.47
ROA	-0.336***	-13.79	-0.333***	-13.72	-0.332***	-13.65
SIZE	0.099***	15.01	0.097***	14.91	0.096***	14.77
MTB	-0.061***	-19.62	-0.060***	-19.2	-0.060***	-19.2
AGE	-0.002***	-4.36	-0.002***	-4.22	-0.002***	-4.32
SPECIAL	0.034	0.68	0.038	0.73	0.035	0.69
RET_VOL	0.578***	6.79	0.560***	6.68	0.561***	6.75
EARN_VOL	0.112**	2.49	0.099**	2.23	0.103**	2.34
NGSEG	0.059***	6.85	0.055***	6.38	0.055***	6.47
NBSEG	0.079***	6.74	0.078***	6.82	0.078***	6.74
NITEMS	1.733***	6.45	1.732***	6.35	1.733***	6.35
MA	0.035***	5.11	0.033***	4.85	0.034***	4.88
SEO	0.043***	4.47	0.044***	4.45	0.044***	4.57
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	26,199		26,199		26,199	
Adj R square	0.438		0.441		0.441	

Table E.6 presents the test results of the relation between financial statement footnote disclosures and specialist auditors, after controlling for management disclosure incentives. There are two panels: Panel A presents the OLS regression results of quantitative financial statement footnote disclosure measure on specialist auditors, after controlling for management disclosure incentives; Panel B presents the OLS regression results of qualitative financial statement footnote disclosure measure on specialist auditors, after controlling for management disclosure incentives. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.7. Financial Statement Footnote Disclosures and Audit Fees, Using Alternative Measure of Specialist Auditors

Panel A Audit fee model without and with financial statement footnote disclosures

	Dependent variable: *AUDFEE*									
	I		II		III		IV		V	
	coef	t-value	coef	t-value	coef	t-value	coef	t-value	coef	t-value
Intercept	9.076***	80.72	8.935***	74.60	8.951***	75.07	5.555***	21.86	5.455***	20.54
SPE1	0.025**	2.34			0.021**	1.96			0.017*	1.66
SPE2	0.033***	2.51			0.034***	2.58			0.027**	2.16
SPE3			0.031	1.50	0.024	1.19			0.031	1.63
SPE4			0.153***	4.39	0.151***	4.31			0.143***	4.33
FT_QUAN							0.190***	6.29	0.189***	6.18
FT_QUAL							0.309***	10.30	0.308***	10.10
FS_QUAN							0.030*	1.70	0.030*	1.72
BIG4	0.244***	7.76	0.238***	8.31	0.223***	7.67	0.255***	7.87	0.227***	7.50
Ln(AT)	0.482***	65.39	0.483***	63.53	0.480***	64.28	0.418***	59.66	0.414***	58.27
NBSEG	0.111***	8.33	0.112***	8.45	0.112***	8.41	0.069***	5.81	0.070***	5.92
LEV	0.210***	4.18	0.209***	4.16	0.211***	4.22	0.067	1.52	0.069	1.60
ROA	-0.384***	-16.64	-0.382***	-16.53	-0.380***	-16.69	-0.265***	-11.42	-0.260***	-11.34
CURRENT	0.487***	9.95	0.490***	9.67	0.484***	9.64	0.560***	12.36	0.551***	11.91
QUICK	-0.050***	-16.87	-0.050***	-17.03	-0.049***	-16.92	-0.048***	-16.90	-0.047***	-16.95
FOREIGN	0.593***	23.36	0.595***	23.19	0.596***	23.22	0.506***	22.44	0.510***	22.38
LOSS	0.077***	4.10	0.077***	4.14	0.077***	4.12	0.026	1.62	0.026*	1.65
OPINION	0.385***	4.30	0.363***	3.91	0.381***	4.11	0.526***	3.40	0.535***	3.36
ACC	0.159***	3.45	0.159***	3.45	0.159***	3.45	0.142***	3.11	0.143***	3.14
DEC	0.080**	2.32	0.079**	2.31	0.080**	2.33	0.058*	1.75	0.059*	1.78
TREND	0.143***	5.58	0.142***	5.56	0.142***	5.57	0.117***	5.24	0.117***	5.25
Industry dummy	yes		yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes		yes	
N	25,783		25,783		25,783		25,783		25,783	
Adj R square	0.856		0.856		0.857		0.866		0.871	

Table E.7 Continued

Panel B Audit fee model with interactions between footnote disclosures and specialist auditors

	Dependent variable: *AUDFEE*					
	I		II		III	
	coef	t-value	coef	t-value	coef	t-value
Intercept	5.734***	18.91	6.161***	8.38	6.151***	8.58
SPE1	-0.196	-0.61			-0.141	-0.47
SPE2	-0.385*	-1.78			-0.363*	-1.67
SPE3			-0.560	-0.94	-0.400	-0.75
SPE4			-0.211	-0.80	-0.173	-0.71
FT_QUAN	0.156***	5.36	0.214***	3.11	0.223***	3.31
FT_QUAL	0.314***	9.11	0.212***	2.28	0.208***	2.33
FT_QUAN×SPE1	-0.023	-0.55			-0.020	-0.47
FT_QUAN×SPE2	0.095***	3.24			0.093***	3.09
FT_QUAN×SPE3			-0.049	-0.75	-0.089	-1.37
FT_QUAN×SPE4			0.113***	2.73	0.093**	2.20
FT_QUAL×SPE1	0.063	1.57			0.058	1.44
FT_QUAL×SPE2	-0.044	-1.16			-0.049	-1.36
FT_QUAL×SPE3			0.113	1.40	0.123	1.63
FT_QUAL×SPE4			-0.054	-1.34	-0.044	-1.11
FS_QUAN	0.031*	1.78	0.030*	1.70	0.031*	1.75
BIG4	0.251***	7.79	0.239***	8.01	0.235***	7.76
Ln(AT)	0.413***	57.30	0.414***	57.41	0.411***	55.78
NBSEG	0.070***	5.83	0.070***	5.94	0.070***	5.95
LEV	0.069	1.59	0.070	1.60	0.072*	1.67
ROA	-0.258***	-11.23	-0.259***	-11.37	-0.253***	-11.23
CURRENT	0.554***	11.95	0.554***	11.83	0.549***	11.58
QUICK	-0.048***	-17.03	-0.048***	-17.12	-0.047***	-17.15
FOREIGN	0.507***	22.33	0.508***	22.14	0.509***	22.09
LOSS	0.027*	1.71	0.026	1.61	0.027*	1.69
OPINION	0.533***	3.62	0.500***	3.10	0.510***	3.36
ACC	0.147***	3.25	0.114***	3.18	0.147***	3.28
DEC	0.058*	1.77	0.058*	1.76	0.058*	1.78
TREND	0.117***	5.25	0.117***	5.25	0.117***	5.26
Industry dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
N	25,783		25,783		25,783	
Adj R square	0.871		0.871		0.871	

Table E.7 presents the test results of the relation between audit fees, specialist auditors, and financial statement footnote disclosures, using alternative measure of specialist auditors based on company sales. There are two panels: Panel A presents the OLS regression results of audit fees on financial statement footnote disclosures and specialist auditors; Panel B presents the OLS regression results of audit fees on interactions between financial statement footnote disclosures and specialist auditors. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.8. Financial Statement Footnote Disclosures and Audit Report Lag

	Dependent variable: *REPLAG*			
	I		II	
	coef	t-stat	coef	t-stat
Intercept	3.018***	13.86	3.289***	14.4
SPE1			-0.007	-0.09
SPE2			0.164**	2.18
SPE3			0.360***	3.47
SPE4			-0.006	-0.08
FT_QUAN	0.022**	2.13	0.024***	2.80
FT_QUAL	0.113***	6.28	0.084***	5.31
FT_QUAN×SPE1			-0.016	-1.25
FT_QUAN×SPE2			-0.021*	-1.85
FT_QUAN×SPE3			-0.001	-1.19
FT_QUAN×SPE4			-0.024***	-2.44
FT_QUAL×SPE1			0.013	0.92
FT_QUAL×SPE2			-0.004	-0.33
FT_QUAL×SPE3			0.014	1.51
FT_QUAL×SPE4			0.001	0.13
FS_QUAN	0.015***	2.95	0.017***	3.08
BIG4	0.010	0.40	0.007	0.08
EXTRA	0.028***	4.74	0.026***	4.65
NBSEG	0.015**	2.23	0.012**	2.32
FOREIGN	0.014	1.17	0.011	1.28
LIT	-0.051***	-3.22	-0.039***	-2.97
GROWTH	0.016	1.22	0.023**	2.19
TECH	-0.028*	-1.79	-0.019	-1.55
ZSCORE	-0.003***	-3.15	-0.003***	-3.24
LOSS	0.018	0.86	0.025	1.57
GC	0.107***	4.42	0.093***	5.08
Ln(AT)	-0.051***	-15.42	-0.052***	-15.23
ACC	-0.151***	-3.71	-0.160***	-3.73
DEC	-0.013	-0.86	-0.011	-0.82
TREND	0.029***	4.51	0.027***	4.37
Industry dummy	yes		yes	
Year dummy	yes		yes	
N	24,658		24,658	
Adj R square	0.278		0.305	

Table E.8 presents the OLS regression results of audit report lag on financial statement footnote disclosures and specialist auditors. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table E.9. Factor Analysis of Complexity

Panel A Eigen values of the correlation matrix of complexity measures

	Eigen value	Difference	Proportion	Cumulative
1	2.650	1.532	0.379	0.379
2	1.118	0.132	0.160	0.539
3	0.986	0.166	0.141	0.680
4	0.820	0.171	0.117	0.797
5	0.649	0.310	0.092	0.889
6	0.543		0.078	0.967
7	0.233		0.033	1

Panel B Standardized scoring coefficient from regression

	Dependent variable: *FACTOR1*
FT_QUAN	0.366
FT_QUAL	0.436
FS_QUAN	0.380
NBSEG	0.053
NGSEG	-0.165
NITEMS	0.204
FOREIGN	-0.141

Panel C Regression of complexity score on specialist auditors

	Dependent variable: *FACTOR1*							
	I		II		III		IV	
	coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
Intercept	-2.386***	-35.90	-2.380***	-36.11	-2.408***	-34.24	-2.399***	-34.08
SPE1			0.008	0.50			0.005	0.31
SPE2			0.041***	3.02			0.034**	2.53
SPE3					0.017	0.70	0.016	0.64
SPE4					0.034**	2.15	0.026*	1.65
BIG4	0.115***	5.81	0.101***	4.89	0.124***	6.38	0.111***	5.49
ROA	-0.571***	-13.39	-0.568***	-13.36	-0.568***	-13.29	-0.567***	-13.27
SIZE	0.238***	29.42	0.236***	29.12	0.236***	29.85	0.234***	29.44
MTB	-0.140***	-20.55	-0.139***	-20.36	-0.139***	-20.43	-0.139***	-20.27
AGE	0.001**	1.96	0.001*	1.90	0.002**	2.00	0.001*	1.95
SPECIAL	-0.244***	-2.74	-0.246***	-2.78	-0.244***	-2.77	-0.246***	-2.80
RET_VOL	0.670***	5.19	0.665***	5.19	0.660***	5.19	0.658***	5.19
EARN_VOL	0.096	1.23	0.097	1.25	0.091	1.18	0.093	1.21
MA	0.085***	8.59	0.085***	8.53	0.085***	8.47	0.085***	8.46
SEO	0.019	0.79	0.021	0.84	0.020	0.82	0.021	0.86
Industry dummy	yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes	
N	26,199		26,199		26,199		26,199	
Adj R square	0.524		0.524		0.524		0.524	

Table E.9 Continued

Panel D Audit fee model with complexity score

	Dependent variable: *AUDFEE*			
	I		II	
	coef	t-value	coef	t-value
Intercept	8.887***	68.48	9.444***	80.69
SPE1	0.021	1.53	0.020	1.45
SPE2	0.064***	4.82	0.060***	4.72
SPE3	0.050**	2.53	0.040**	2.31
SPE4	0.136***	11.83	0.132***	11.39
FACTOR1			0.221***	16.58
BIG4	0.343***	13.64	0.322***	12.50
Ln(AT)	0.485***	55.22	0.433***	53.41
LEV	0.276***	5.03	0.189***	3.50
ROA	-0.019	-0.70	-0.054**	-2.29
CURRENT	0.590***	10.98	0.647***	12.53
QUICK	-0.056***	-16.27	-0.054***	-15.45
LOSS	0.166***	9.97	0.120***	7.94
OPINION	0.427***	4.14	0.431***	2.79
ACC	0.136***	3.36	0.105***	2.73
DEC	0.084**	2.36	0.069**	2.07
TREND	0.151***	5.69	0.118***	5.39
Industry dummy	yes		yes	
Year dummy	yes		yes	
N	26,199		26,199	
Adj R square	0.812		0.824	
F test on *FACTOR1* F=274.91***				

Table E.9 presents the test results of the common factor analysis of complexity. There are four panels: Panel A presents the eigen values of the correlation matrix of the seven complexity measures; Panel B presents the standardized scoring coefficient from regression; Panel C presents the OLS regression results of factor score (*FACTOR1*) on specialist auditors; Panel D presents the OLS regression results of audit fees on specialist auditors and factor score. All variables are defined in Appendix C. All t-statistics are clustered by company and year. *, **, *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

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