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# Section 404 Audit Costs for Small Companies: The Benefit of Waiting

by

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## **What Will Non-Accelerated Filers Have to Pay for the Section 404 Internal Control Audit?**

### **Abstract**

Starting in December 2009, small companies classified as non-accelerated filers must obtain an internal control audit to comply with Section 404 of the Sarbanes-Oxley Act. This study estimates the cost of the internal control audit for new accelerated filers in 2006 and 2007 and assesses whether the new internal control auditing standard, Auditing Standard No. 5, has reduced Section 404-related audit costs. The study finds that the median cost of the internal control audit as a percentage of total audit fees is 42% for new accelerated filers in 2006 and 37% in 2007. This suggests that Section 404-related audit costs have fallen modestly since Auditing Standard No. 5 was adopted, although the change is not statistically significant. The 2007 results provide a reasonable estimate of what non-accelerated filers will have to pay when they comply in 2009.

*Keywords:* Section 404 compliance costs, internal control, audit fees, non-accelerated filers, Auditing Standard No. 5.

*Data Availability:* Data used in this study are from Compustat, Audit Analytics, and Edgar.

## I. INTRODUCTION

When Section 404 of the Sarbanes-Oxley Act was enacted, regulators imposed different compliance deadlines for large and small companies due to concerns that the compliance costs would be financially burdensome to small companies. The large companies designated as accelerated filers began complying with Section 404 in 2004. Higher-than-expected Section 404 compliance costs led regulators to repeatedly extend the compliance deadline for non-accelerated filers, defined as companies with public float<sup>1</sup> of less than \$75 million.<sup>2, 3</sup> On December 15, 2009 the non-accelerated filers are scheduled to begin complying with the audit requirement of Section 404. The purpose of the research is to estimate the cost of the Section 404 audit for new accelerated filers in 2006 and 2007 and assess whether the new internal control auditing standard, Auditing Standard No. 5, has reduced Section 404-related audit costs. The 2007 results provide a reasonable estimate of what non-accelerated filers will have to pay when they comply.

Section 404 is the most controversial and costly part of the Sarbanes-Oxley Act. To comply with Section 404 managers must provide an internal assessment of the company's internal control over financial reporting. The company's independent auditor must then attest to the effectiveness of its client's internal control over financial

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<sup>1</sup> Public float is the value of a company's shares held by the public rather than by officers, directors, and others that have a controlling interest in the company.

<sup>2</sup> While the \$75 million public float is the major criterion for an accelerated filer, there are several other criteria. According to SEC Release no. 33-8128 (September 5, 2002) a company is an accelerated filer if it meets the following conditions: 1) its common equity public float was \$75 million or more as of the last business day of its most recently completed second fiscal quarter; 2) the company has been subject to the reporting requirements of Section 13(a) or 15(d) of the Exchange Act for a period of at least 12 calendar months; 3) the company has previously filed at least one annual report pursuant to Section 13(a) or 15(d) of the Exchange Act; and 4) the company is not eligible to use Forms 10-KSB and 10-QSB.

<sup>3</sup> To put the \$75 million cut-off for public float into perspective, at the end of the second quarter of 2008, Microsoft Corp. had public float of \$288 billion, 1-800-Flowers.com, Inc. had public float of \$227 million, and Caribou Coffee Company, Inc. had public float of \$51 million.

reporting.<sup>4</sup> Surveys indicate that the 2004 Section 404 compliance costs were twenty times higher than originally estimated by the Securities and Exchange Commission (SEC) (Atkins 2006). Compliance costs have been high for both the management assessment of internal control over financial reporting and the independent audit requirement (Sneller and Langendijk 2007).

This study is concerned with the compliance costs stemming from the independent audit requirement of Section 404, hereafter referred to as the Section 404 audit fee premium. The Section 404 audit fee premium was 50% on average for the accelerated filers that complied in 2004 (CRA International 2006; Eldridge and Kealey 2005; Financial Executives International 2006; Iliev 2008). This implies that in the first year of compliance, the internal control audit caused audit fees to double on average. For companies that have already complied with Section 404, the cost burden has been higher for small companies. Krishnan et al. (2008) find that the audit costs associated with Section 404 increase in client assets, but that the total costs relative to assets are lower for larger firms. This indicates economies of scale in firm size in the internal control audit.

To reduce the cost of the internal control audit, the Public Company Accounting Oversight Board (PCAOB) issued Auditing Standard No. 5 in May 2007 and the SEC introduced related interpretive guidance in June 2007. The original standard, Auditing Standard No. 2, is recognized as contributing to the higher-than-expected compliance costs (Atkins 2006).

Our study estimates the Section 404 audit fee premium for new accelerated filers in 2006 and 2007 and assesses whether the premium fell in 2007 after Auditing Standard

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<sup>4</sup> The non-accelerated filers began complying with the internal management assessment requirement for fiscal year ending on or after December 15, 2008.

No. 5 was adopted. The study makes three contributions. First, estimating the Section 404 audit fee premium for new accelerated filers in 2007 provides the best estimate of the expected audit fee premium of the non-accelerated filers when they have to begin complying in December 2009. This will inform policy makers about the regulatory costs for the non-accelerated filers and could assist in the decision of whether to extend the compliance deadline again or alter the requirements for compliance. This is an important policy decision because small firms are responsible for considerable job growth and innovation in the economy. Because there are economies of scale in the Section 404 audit fee premium, these compliance costs are more burdensome for small firms than for large firms. An important issue to consider is whether the Section 404 audit fee premium could financially weaken the non-accelerated filers.

Second, we assess whether the Section 404 audit fee premium declined after the adoption of the new internal control auditing standard, Auditing Standard No. 5. While the purpose of the standard is to induce auditors to adopt more efficient procedures for conducting the internal control audit, it is uncertain whether the new standard has had a substantive effect on audit costs. Auditors may be so concerned about potential shareholder lawsuits that they will continue the conservative, less efficient approach. Even if Auditing Standard No. 5 does change the way internal control audits are conducted, the magnitude of the change could be small, resulting in a minimal reduction in audit costs.

The third contribution of the study is that it will help indirectly assess the increase in the audit firm resources required to perform Section 404 audits for non-accelerated filers. When Section 404 was implemented in 2004, increased demand for Section 404-

related audit services increased the use of audit resources. Since accelerated filers comprised a large fraction of Big 4 clients, and the Big 4 could not expand quickly enough to accommodate the increase in demand, this precipitated a large increase in switching from Big 4 auditors to smaller auditors (Jean 2004; Sullivan 2007). If the resource requirements to perform a new Section 404 audit remain high, this could disrupt the audit industry when all the non-accelerated filers are required to obtain this audit within a short period of time. In 2007, 75% of the non-accelerated filers in our sample were audited by non-Big 4 auditors. An important question is whether these non-Big 4 auditors will be able to expand quickly enough to perform Section 404 audits for the non-accelerated filers.

We estimate the Section 404 audit fee premium using archival data. The audit fees reported by companies in regulatory filings combine the costs stemming from both the financial statement audit and the internal control audit. The Section 404 audit fee premium must be estimated because companies do not identify the portion of their total audit fees attributable to the internal control audit. In theory, the Section 404 premium is the total audit fee paid by an accelerated filer minus the fee the firm would have paid had it remained a non-accelerated filer and, hence, not obtained an internal control audit. In reality, we do not observe the audit fee the accelerated filer would have paid had it remained a non-accelerated filer therefore we must estimate it. We use the estimates from an audit fee regression model for non-accelerated filers to estimate the hypothetical audit fee an accelerated filer would have paid had it remained non-accelerated filer.

Two methodological issues must be addressed in estimating the Section 404 premium, both due to the non-random selection process for accelerated filers. First, the

\$75 million public float threshold for accelerated filers causes new accelerated filers to be larger on average than non-accelerated filers and differ with respect to other audit fee determinants. Unless this problem is corrected, the estimated parameters from the non-accelerated filer fee regression would provide biased estimates of the hypothetical audit fees accelerated filers would have paid as non-accelerated filers. This, in turn, would result in a biased estimate of the Section 404 audit fee premium. We use propensity score matching to create a sample in which the accelerated filers and non-accelerated filers are similar with respect to observable characteristics. Propensity score matching has been used in accounting (Doyle et al. 2007; Francis and Lennox 2008), labor economics (Dehejia and Wahba 1999; Heckman et al. 1997), and finance (Colak and Whited 2006; Li and Zhao 2006; Villalonga 2004 ).

In addition, some firms may have systematically taken unobservable actions to avoid accelerated filer status, resulting in selection bias. Selection bias may occur if the firms that avoid accelerated filer status would have paid more for the Section 404 audit than the firms that actually complied. To determine whether self-selection bias results from avoidance, we use the Heckman procedure, which involves estimating the inverse Mills ratios from a first-stage probit model and including them as determinants in the audit fee regressions (Chaney et al. 2004; Francis and Lennox 2008).

The rest of the paper is organized as follows. Section 2 provides background on Section 404 and reviews studies of the Section 404 audit fee premium. Section 3 describes the methodology. The data and sample are described in Section 4. Section 5 presents the results and Section 6 concludes the paper.



## **II. BACKGROUND**

In response to the Enron and other accounting scandals, the U.S. Congress passed the Sarbanes-Oxley Act of 2002 (SOX). The purpose of SOX is to restore investor confidence to the market by improving the reliability of accounting information reported to investors. Section 404 requires publicly-held companies to identify risks to the company's financial reporting system and to develop internal controls that address these risks. Internal controls include a wide range of activities designed to prevent fraudulent and misleading financial reporting and to safeguard revenues and assets.

When Section 404 compliance costs proved to be much higher than expected, the PCAOB conducted a study of the original auditing standard for internal control over financial reporting, Auditing Standard No. 2, to determine how the internal control audit costs might be reduced. The study found several problems with the way the standard was implemented. Auditors tended to perform detailed tests of a great number of controls without regard to their risk or importance. In addition, some auditors did not use the work of others in circumstances where this was permitted. Finally, auditors did not always integrate the internal control audit with the audit of financial statements (Public Company Accounting Oversight Board 2005).

The new standard, Auditing Standard No. 5, takes a risk-based approach, focusing on the most important controls rather than treating each control in a uniform manner. Auditing Standard No. 5 emphasizes risk and materiality rather than routine evaluation of all controls. The new standard makes the audit "scalable" so that it can be adapted to smaller, less complex companies. It also allows the auditor to rely more on the work of

others, which should reduce the external auditor cost and eliminate duplication (Cox 2007).

Our study is the first to provide an estimate of the expected Section 404 audit fee premium for non-accelerated filers and to assess the effect of Auditing Standard No. 5 on this premium. Several features of the study are designed to address these objectives. First, the sample consists of small companies, similar in size to non-accelerated filers. Second, the accelerated filers in the sample are new accelerated filers, complying with Section 404 for the first time. Third, the 2007 sample includes only accelerated filers that used Auditing Standard No. 5 for their internal control audit that year, permitting a comparison of the Auditing Standard No. 2 audits in 2006.

As mentioned in the introduction, early studies find that the Section 404 audit fee premium is about 50% of total audit fees in 2004, the first year of compliance. Subsequent studies suggest that these costs have fallen over time. Estimates of the Section 404 audit fee premium during the second year of compliance are 41% of total audit fees (CRA International 2006) and 45% of total audit fees (Financial Executives International 2006). For 2006, the first year of our study, the Financial Executives International (FEI) survey estimates that the Section 404 audit fee premium had fallen to 27.5% of total audit fees (Sinnott 2007), a large drop from its estimate from the previous year of 45%. The FEI survey for 2007 estimates the Section 404 audit fee premium as 23.7% of total audit fees (Financial Executives International 2008).

The cost reductions estimated by these studies will not necessarily be realized by first-time accelerated filers because the surveys on which the studies are based include seasoned accelerated filers—companies that became accelerated filers prior to the survey

period. If the observed reductions in the cost of the Section 404 audit stem from client-specific learning effects—learning that results from conducting the internal control audit repeatedly for a specific client—then first-time accelerated filers may not benefit from them. Alternatively, if the cost reductions are attributable to the auditors’ general learning about Section 404 audits, they would apply to any client, including first-time accelerated filers. Since our samples do not include seasoned accelerated filers, our estimates will not erroneously capture client-specific learning affects that stem from performing an internal control audit repeatedly for the same client.

In addition, the estimates from other studies are based on firms that are much larger on average than non-accelerated filers. For FEI’s survey of 2006 costs, the respondents had average annual revenues of \$6.8 billion (Financial Executives International 2007); for its survey of 2007 costs, the respondents had average annual revenues of \$4.7 billion (Financial Executives International 2008). In contrast, the mean sales for the firms in our samples are \$120 million in 2006 and \$100 million in 2007. The Section 404 audit fee premia are unlikely to be the same for firms so different in size.

At this time no studies have been conducted to assess whether Auditing Standard No. 5 has reduced Section 404 compliance costs. While FEI conducted surveys in both 2006 and 2007, it is not clear whether all of the accelerated filers in their 2007 sample had been audited with Auditing Standard No. 5, since the new standard only became mandatory on November 15 of that year. The SEC is currently conducting a study of the compliance costs associated with Section 404, in part to examine the effect of Auditing Standard No. 5 (Burns 2007), but the results are not yet known.

Existing studies of the Section 404 audit fee premium have been based on either expert assessments or archival data. Surveys and self-reported data rely on expert assessments of the portion of the premium.

For the first year after Section 404 was implemented, a small number of firms voluntarily reported their Section 404 compliance costs. Eldridge and Kealey (2005) and Krishnan et al. (2008) used this self-reported data to examine the Section 404 audit fee premium. Numerous studies have employed surveys to estimate the Section 404 audit fee premium. The FEI studies are based on surveys of public companies.<sup>5</sup> The CRA International studies are based on a survey of the Big 4 accounting firms on their clients' Section 404 implementation costs.<sup>6</sup>

Self-reported data and survey data rely on judgment in determining the portion of the audit fee attributable to Section 404. Since there are joint costs of performing the financial statement audit and the Section 404 audit, someone must decide how to allocate the joint costs to the two types of audits, which is not always a straightforward task. Survey responses can also be influenced by halo effects whereby a person's attitude toward the survey topic affects the responses to all the questions (Beckwith and Lehmann 1975). For example, in our application someone who is unfavorably disposed to Section 404 may overstate the fraction of the audit fee attributable to Section 404, leading to an upward biased estimate. One advantage of using archival data to estimate the Section 404 audit fee premium is that it does not require use of judgment. Surveys can also suffer

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<sup>5</sup> The FEI web site contains a list of the surveys conducted on Section 404 compliance costs: [http://www.financialexecutives.org/eweb/DynamicPage.aspx?site=\\_fei&webcode=adv\\_SOX](http://www.financialexecutives.org/eweb/DynamicPage.aspx?site=_fei&webcode=adv_SOX)

<sup>6</sup> These studies were commissioned by the Big 4 accounting firms.

from response bias when the companies that choose to report Section 404 compliance costs are not randomly selected (Krishnan et al. 2008).

Two studies that use archival data to estimate Section 404 audit fee premium are Raghunandan and Rama (2006) and Iliev (2008). Raghunandan and Rama (2006) use audit fees from Audit Analytics for a sample of manufacturing firms in 2004. By comparing the 2004 total audit fees to the 2003 total audit fees, the study finds that internal control weaknesses have a positive effect on audit fees.

To estimate the Section 404 premium with archival data, Iliev (2008) compares the audit fees of the 2004 accelerated filers with the fees of the non-accelerated filers in that year. Iliev uses regression discontinuity analysis to reduce the bias from the non-random selection process that causes the accelerated filers to be larger than the non-accelerated filers. To implement the regression discontinuity analysis, he restricts the sample to firms with public float between \$50 million and \$100 million, with \$75 million being the cutoff for complying with Section 404. One disadvantage of this method is that restricting the sample to firms in the \$50 million - \$100 million range of public float reduces the sample size. This is not a serious concern for Iliev's analysis because many firms became accelerated filers in 2004. However, since 2004, a relatively small number of firms have become accelerated filers each year. Restricting the 2006 and 2007 samples to firms with public float between \$50 million and \$100 million would result in sample that is unreasonably small for the purpose of estimation.

### **III. DEVELOPMENT OF METHODOLOGY**

Our estimate of the Section 404 audit fee premium for firm  $i$ , a new accelerated filer, equals the actual audit fee paid by firm  $i$  minus the expected fee firm  $i$  would have

paid had it remained a non-accelerated filer and, hence, not obtained an internal control audit:  $Fee_{A,i} - E(Fee_{NA,i})$ , where A represents new accelerated filers and NA represents non-accelerated filers. To estimate  $E(Fee_{NA,i})$ , we use the estimated parameters from the non-accelerated filer audit fee regression to compute the predicted audit fee with the accelerated filer's characteristics.

As mentioned in the introduction, firms are not randomly selected into accelerated filer status and this leads to two problems that must be addressed by the estimation methodology. First, the regulatory criteria dictating which firms become accelerated filers cause the accelerated filers to be larger than non-accelerated filers and differ with respect to other observable characteristics. Unless this problem is corrected, the benchmark audit fee estimated using non-accelerated filer parameters will provide a biased estimate of  $E(Fee_{NA,i})$ , the audit fee that an accelerated filer would have paid absent the Section 404 audit (Heckman et al. 1997). This in turn would result in a biased estimate of the Section 404 audit fee premium. We use propensity score matching to create a sample in which new accelerated filers are matched with non-accelerated filers with similar observable characteristics. The propensity score is the probability of being an accelerated filer as a function of observable characteristics. Propensity score matching reduces the dimensionality of the problem because instead of matching the two classes of firms on all of the observable characteristics, it is sufficient to match them on the basis of estimated propensity scores (Rosenbaum and Rubin 1983). This eliminates the bias from the two classes of firms having different characteristics (Heckman and Navarro-Lozano 2004). In accounting, Doyle et al. (2007) use propensity score matching to estimate the relation

between accruals quality and weaknesses and Francis and Lennox (2008), to estimate the Big 4 audit fee premium.

The second selection issue that arises is that firms may have self-selected into non-accelerated filer status by taking actions to prevent their public float from reaching the \$75 million threshold. Some of these actions are observable. For example, firms could avoid accelerated filer status by buying back their shares to reduce their public float. Observable actions can be controlled for in the propensity score model and, therefore, will not result in a biased estimate of the Section 404 audit fee premium. However, some of the actions may not be observable, such as deciding not to expand when expansion is optimal. If the expected Section 404 audit fee premium is higher for firms that avoid accelerated filer status than for those that become accelerated filers, and unobservable factors affect the decision to avoid, then the estimated Section 404 audit fee premium will be downward biased. In this case the estimated premium would be lower than the premium based on a sample in which firms are randomly selected into accelerated filer status.

To address the possibility that self-selection bias results from avoidance, we estimate inverse Mills ratios and include them as determinants in the audit fee regressions (Chaney et al. 2004; Francis and Lennox 2008). We estimate separate audit fee regressions for accelerated filers and non-accelerated filers using the matched samples created from propensity score matching.

### **Estimating the Propensity Scores and Computing the Inverse Mills Ratios**

We use the following probit model to estimate the probability that a firm is an accelerated filer based on observable characteristics. We use the results for two

purposes, to compute the propensity scores and to estimate the inverse Mills ratios that are used in the audit fee regressions.

$$\begin{aligned}
 Acflr_{it} = & \beta_0 + \beta_1 LnFee_{it-1} + \beta_2 LnAssets_{it} + \beta_3 SqSegments_{it} + \beta_4 Foreign_{it} + \beta_5 InvRec_{it} \\
 & + \beta_6 Big4_{it} + \beta_7 Initial_{it} + \beta_8 Roa_{it} + \beta_9 Loss_{it} + \beta_{10} Liquidity_{it} + \beta_{11} Cash_{it-1} \\
 & + \beta_{12} NewDebt_{it-1} + \beta_{13} Risk_{it-1} + \beta_{14} NewStock_{it-1} + \beta_{15} Growth_{it-1} + \beta_{16} LnFloat_{it-1} + \xi
 \end{aligned} \tag{1}$$

where  $i$  represents firm  $i$  and  $t$  indicates year  $t$ .

The dependent variable,  $Acflr_{it}$ , is an indicator variable that equals 1 if firm  $i$  becomes an accelerated filer in year  $t$  and equals zero if firm  $i$  remains a non-accelerated filer.

The determinants of the propensity score model include audit fee determinants, factors that may be related to avoidance efforts, and other factors that may affect accelerated filer status. Since the outcome of interest is audit fees, it is necessary to include audit fee determinants in the propensity score model because this helps to match accelerated filers and non-accelerated filers on the basis of these audit fee determinants. Therefore we include the following audit fee determinants as covariates.<sup>7</sup>  $LnAssets_{it}$  is the natural log of total assets,  $SqSegments_{it}$  is the square root of the number of geographic segments,  $Foreign_{it}$  is a measure of foreign activity, and  $InvRec_{it}$  equals inventories plus accounts receivables divided by total assets. These factors are related to the size and complexity of the firm.  $Initial_{it}$  indicates whether the firm is in the initial year of an audit engagement and is included to control for low-balling.  $Big4_{it}$  indicates whether a firm is audited by a Big 4 auditor.  $Roa_{it}$  is operating income divided by total assets.  $Loss_{it}$  indicates whether the firm experienced a loss in the current or previous years.  $Liquidity_{it}$

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<sup>7</sup> These determinants are based on studies of audit fees (Craswell, Francis and Taylor 1995; Palmrose 1986; Simunic 1980; Whisenant et al. 2003).



is the ratio of current assets to current liabilities. The log of the previous year's audit fee,  $LnFee_{it-1}$ , is included to control for omitted firm-specific factors that affect audit fees.

We include several factors in the probit model that may be associated with the avoidance of accelerated filer status. Since avoidance attempts would likely have occurred prior to the filing year  $t$ , these variables are measured in year  $t-1$ . An obvious variable to include to detect avoidance is a firm's repurchase of common stock. A firm can avoid accelerated filer status by repurchasing its common stock to lower its public float to below the \$75 million cutoff. Unfortunately, for each year of our analysis, only one firm – a non-accelerated filer in each case – repurchased common stock. Technically one cannot include a variable that is perfectly correlated with one outcome in a probit model, so this variable cannot be included in the analysis. Moreover, a lone non-accelerated filer repurchasing stock does not provide evidence of systematic avoidance of accelerated filer status.

There are no direct measures indicating whether a firm decided not to issue new stock to avoid accelerated filer status. We include two variables to proxy for a firm's decision not to issue new stock. The variable  $Cash_{it-1}$  is a measure of a firm's ability to forego the issuing of new stock. A firm with high cash reserves is in a better position to maintain its current operation without issuing new stock. Dittmar (2000) finds that cash is positively related to a firm's decision to buy back its stock. A negative sign for  $Cash_{it-1}$  would be consistent with avoidance of accelerated filer status. In addition, a company avoiding accelerated filer status may decide to obtain new financing by issuing debt rather than stock. We include  $NewDebt_{it-1}$ , which is equal to 1 if the firm issues new debt. If debt financing is used as an alternative to issuing stock for the purpose of keeping the

public float below the \$75 million threshold, then  $NewDebt_{it-1}$  should be negatively associated with becoming an accelerated filer.

Krishnan et al. (2008) find evidence that companies with internal control weaknesses pay a higher Section 404 audit fee premium. Therefore a company may be more likely to avoid accelerated filer status if it believes it will have internal control weaknesses. Ge and McVay (2005) find that internal control weaknesses are more prevalent in high-litigation risk industries. As a proxy for internal control weaknesses we include  $Risk_{it-1}$ , an indicator variable for high-litigation risk industries.

We also include control variables that may affect the probability of becoming an accelerated filer in year  $t$ . Since increasing common stock can increase public float,  $NewStock_{it-1}$  should increase the likelihood of becoming an accelerated filer. We also control for sales growth,  $Growth_{it-1}$  and the log of float in  $t-1$ ,  $LnFloat_{it-1}$  because firms that are growing and firms with large prior-year float are more likely to become accelerated filers.

The propensity scores are the predicted probabilities of being an accelerated filer based on the results of the probit model estimation. Each accelerated filer is matched to the non-accelerated filer with the closest propensity score. Only the firms in the *common support* are included in the matching procedure. The common support includes non-accelerated filers and accelerated filers with overlapping propensity scores. Non-accelerated filers with propensity scores lower than the lowest propensity score of the accelerated filers are not in the common support, nor are accelerated filers with propensity scores greater than the highest propensity score of the non-accelerated filers. Matching only firms in the common support improves the closeness of the matching.

We also use the estimates from model (1) to compute the inverse Mills ratios  $IMR_A$  for the new accelerated filers and  $IMR_{NA}$  for the non-accelerated filers.

After creating matched samples with the propensity scores, we used the matched samples to estimate the second-stage audit fee regressions, which include the inverse Mills ratios as explanatory variables:

$$\begin{aligned}
 LnFee_{it} = & \alpha_{0j} + \alpha_{1j}LnFee_{it-1} + \alpha_{2j}LnAssets_{it} + \alpha_{3j}SqSegments_{it} + \alpha_{4j}Foreign_{it} \\
 & + \alpha_{5j}InvRec_{it} + \alpha_{6j}Big4_{it} + \alpha_{7j}Initial_{it} + \alpha_{8j}Roa_{it} + \alpha_{9j}Loss_{it} + \alpha_{10j}Liquidity_{it} \\
 & + \alpha_{11j}IMR_{ijt} + \varepsilon_{it}
 \end{aligned} \tag{2}$$

where  $i$  represents firm  $i$ ,  $j = A$  for new accelerated filers,  $j = NA$  for non-accelerated filers, and  $t$  indicates year  $t$ . The estimated coefficients have  $j$  subscripts because the audit fee regressions are estimated separately for new accelerated filers and non-accelerated filers, resulting in different estimated coefficients and intercepts for the two filer types.

Unobservable factors stemming from avoidance attempts should be reflected in the estimated coefficient for the inverse Mills ratio in the accelerated filer audit fee regression. Specifically, avoidance would be consistent with a negative estimated coefficient  $\alpha_{11A}$  in the accelerated filer regression. A negative  $\alpha_{11A}$  would mean that the new accelerated filers in the sample paid lower fees than a randomly-selected group of firms would have paid had they been accelerated filers. Such a finding would imply that on average, the non-accelerated filers in the sample would have paid higher fees had they obtained the Section 404 audit than the accelerated filers actually paid.

We then use the estimated parameters from the non-accelerated filer audit fee regression to compute the expected fee that firm  $i$ , an accelerated filer, would have paid had it remained a non-accelerated filer.

#### IV. DATA AND SAMPLE

We create samples to estimate the Section 404 audit fee premium for first-time accelerated filers in 2006 and 2007. The samples consist of all firms that were non-accelerated filers in year t-1. Non-accelerated filers in year t-1 became first-time accelerated filers in year t if they met the accelerated filer criteria by the end of the second quarter of year t.

We omit non-accelerated filers with prior-year public float of \$75 million or greater. These firms had reached the accelerated filer size criterion prior to year t but were exempt from accelerated filer status because they had only recently become public companies.<sup>8</sup> Including these relatively large companies would result in an estimated Section 404 audit fee premium that is not representative of the smaller firms that are the focus of this study. We also omit firms that had previously been accelerated filers and reverted to non-accelerated filer status. These firms are different than non-accelerated filers that have never complied with Section 404.

The samples include all firms classified as non-accelerated filers by Audit Analytics in all years prior to the year of the analysis. Banks and other financial firms (SIC 6000-6999) have fundamentally different operating characteristics so we omit them from the sample. Moreover, firms in finance-related industries adopted internal control procedures similar to those mandated by Section 404 in the early 1990s,<sup>9</sup> so they may have lower costs of complying with Section 404 than firms in other industries. We also omit firms with missing Audit Analytics and Compustat variables. For this reduced sample we hand collect prior-year public float from 10-K reports in the SEC's Edgar

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<sup>8</sup> See footnote 2 of the introduction for a list of criteria for being an accelerated filer.

<sup>9</sup> The Federal Deposit Insurance Corporation Improvement Act was enacted in 1992.

database. Firms for which prior-year public float is not available are omitted from the sample.

For the 2007 data set, we omit accelerated filers that were audited with Auditing Standard No. 2. This provides a clean basis for comparison with the 2006 sample, for which all the accelerated filers used Auditing Standard No. 2. Firms were permitted to use Auditing Standard No. 5 after the SEC approved it in July 2007 and were required to use it when it became mandatory on November 15, 2007.

These sample selection criteria result in a 2006 sample with 74 accelerated filers and 591 non-accelerated filers. The 2007 sample has 71 accelerated filers and 406 non-accelerated filers. The variables are defined in the Appendix.

Table 1 shows that for both samples, the audit fees in year  $t$  are significantly higher for accelerated filers than non-accelerated filers. This is expected since the accelerated filers' audit fees include the Section 404 premium. However, the two classes of firms also differ with respect to several other variables, implying that the selection process for accelerated filers is not random. In both samples, accelerated filers have significantly higher assets, new debt financing, new stock financing, prior-year fees and prior-year float than the non-accelerated filers. In 2006,  $Loss_t$  differs for accelerated filers and non-accelerated filers. In 2007, the two filer types differ with respect to  $Big4_t$ ,  $Initial_t$ , and  $Growth_{t-1}$ .<sup>10</sup>

The correlations are provided in Table 2. Some of the correlations among the audit fee determinants are high, especially the correlations of  $LnFee_{t-1}$  and  $LnAssets_t$  with several of the variables. This shows that it is necessary to test for multicollinearity in the subsequent analysis.

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<sup>10</sup> In the remainder of the paper, the subscript  $i$  is dropped from the variables to simplify the exposition.

## V. RESULTS

The results of the probit model estimation are provided in Table 3. Two audit fee determinants have a significant effect on the probability of being an accelerated filer. Firms with higher assets are more likely to be accelerated filers in both years. Having a Big 4 auditor is negatively associated with being an accelerated filer in 2006 and positively associated with being an accelerated filer in 2007. The positive sign in 2007 is not surprising, given that only 25% of non-accelerated filers were audited by Big 4 auditors that year versus 58% for new accelerated filers. In 2006, the Big 4 share was about the same for non-accelerated filers and new accelerated filers (33% versus 35%).

The factors included to detect avoidance either have signs that are inconsistent with avoidance or are statistically insignificant. Neither  $Cash_{t-1}$  nor  $Risk_{t-1}$  has a statistically significant effect on the probability of becoming an accelerated filer in either sample. New debt financing is positively associated with becoming an accelerated filer, which is inconsistent with avoiding accelerated filer status by issuing debt as alternative to stock financing.

Each of the control variables is statistically significant in one or both years. New stock financing is positively related to becoming an accelerated filer in 2007, but not 2006. The log of public float from the prior year is positively related to becoming an accelerated filer in both years.  $Growth_{t-1}$  is positively related to becoming an accelerated filer in 2007.

The estimated results of the probit model in Table 3 are used to estimate both the propensity scores that are used to create matched samples and the inverse Mills ratios that are included in the audit fee regression analysis.

The estimated propensity scores are used to match the accelerated filers to non-accelerated filers as described in Section 3. We exclude from the sample firms that are not in the common support, where the common support consists of non-accelerated filers and accelerated filers with overlapping propensity scores. In 2006, 3 of the 74 accelerated filers are not in the common support and in 2007, 2 of the 71 accelerated filers are not in the common support. That leaves 71 accelerated filers in 2006 and 69 in 2007. Each of the accelerated filers in the common support is matched with the non-accelerated filer with the closest propensity score.

Table 4 shows that for the 2006 matched sample, the accelerated filers do not differ significantly from the non-accelerated filers for any variables except  $LnFee_t$ , which is expected since accelerated filers must pay the Section 404 audit. In 2007, the only variable with a mean that differs for accelerated filers and non-accelerated filers is  $Foreign_t$ , but the difference is significant only at the 10% level. Overall the matching of the accelerated filers and non-accelerated filers is very close.

The regression results from equation (2) are provided in Table 5, with the accelerated filer regression results reported in Panel A and the non-accelerated filer regression results in Panel B. The explanatory power of the determinants is similar to other audit fee studies, with the adjusted  $R^2$  ranging from 0.67 to 0.84. In each regression, the estimated coefficient of  $LnFee_{t-1}$  is positive and statistically significant. The estimated coefficient of  $LnAssets_t$  is positive and significant in the 2007 regressions for both accelerated filers and non-accelerated filers.  $Big4_t$  is positive and significant in the 2006 accelerated filer regression.  $Liquidity_t$  has a negative significant effect in the 2007 non-accelerated filer regression. Each of the significant coefficients has the expected sign.

Several audit fee determinants are not statistically significant, probably because the sample sizes are small and there is limited variability in the determinants because the samples include only firms that were non-accelerated filers in year t-1. Nonetheless, the R<sup>2</sup>s indicate that explanatory power of the regressions is fairly high. Multicollinearity is not a problem in the regressions. The highest variance inflation factor (VIF) is 3.51 for  $LnAssets_t$  for the 2007 accelerated filer regression. VIF is used to identify the severity of multicollienarity, which is regarded as high when a VIF exceeds 10 (Belsey et al. 1980; Greene 2008).

The estimated coefficient of the inverse Mills ratio is not statistically significant in any of the regressions. However, the estimated coefficient is negative and has a p-value of 0.12 in the 2006 accelerated filer regression, which is close to significant at the 10% level. This is notable, since a negative coefficient for an accelerated filer inverse Mills ratio is consistent with avoidance efforts by non-accelerated filers. Nonetheless, since the estimated coefficient is not statistically significant at conventional levels, we cannot interpret this estimated coefficient as consistent with avoidance.

The estimated Section 404 audit fee premium for firm i, a new accelerated filer, equals its actual audit fee minus the hypothetical fee firm i would have paid had it remained a non-accelerated filer:  $Premium_{it} = Fee_{A,it} - E(Fee_{NA,it})$ . To make the premium comparable for the two years, we compute  $PremShare_{it}$ , the premium paid by firm i as a fraction of its total audit fee in year t:  $PremShare_{it} = Premium_{it}/Fee_{it}$ .

A summary of the estimates of  $PremShare$  is provided in Table 6. For 2006, the median  $PremShare$  is 0.42. This means that the Section 404 audit fee premium of the median new accelerated filer in 2006 was 42% of its total audit fee that year. The 25<sup>th</sup> and



75<sup>th</sup> percentiles of PremShare are 0.24 and 0.56, respectively. The mean PremShare is 0.36 in 2006.

The results for 2007 suggest that PremShare has fallen modestly. The median PremShare is 0.37, down from 0.42 in 2006. The 25<sup>th</sup> and 75<sup>th</sup> percentiles of PremShare are also somewhat lower relative to 2006, as is the mean PremShare.

Further examination reveals that the reduction in PremShare in 2007 is not statistically significant. We conduct a t-test to determine whether the 2006 mean is higher than the 2007 mean and a Wilcoxon rank-sum test (z-statistic) to determine whether the PremShare for the two years come from different distributions. Neither the t-statistic nor the z-statistic is statistically significant at even the 10% level using a 1-tailed test.

## **VI. CONCLUSION**

In December 2009 non-accelerated filers will have to begin complying with the independent audit requirement of Section 404 of the Sarbanes-Oxley Act. Since Section 404 was implemented in 2004, regulators have extended the compliance deadline four times and revised the internal control auditing standard from Auditing Standard No. 2 to Auditing Standard No. 5. The study has two objectives: to provide an estimate of the Section 404 audit fee premium that non-accelerated filers will have to pay when they obtain an internal control audit and to assess whether Auditing Standard No. 5 has succeeded in reducing the Section 404 audit fee premium.

The estimated audit fee premium in 2007 provided by this study is the most recent estimate of the Section 404 premium and is based on small firms that are first-time accelerated filers. Therefore it is the best estimate of what the non-accelerated filers will pay when they are required to obtain an internal control audit starting in December 2009.

The median PremShare, audit fee premium as share of total audit fee, for new accelerated filers in 2007 is 37% and the mean is 32%. While the premium is not trivial, it appears lower than the 50% PremShare that new accelerated filers paid in 2004, the first year of compliance. The Section 404 premium for the smallest non-accelerated filers could be somewhat larger as a percentage of the total audit fees than the estimates provided by this study since the cost of the Section 404 audit appears to exhibit economies of scale.

The Section 404 audit fee premium for first-time accelerated filers appears to have fallen somewhat in 2007, although the reduction is not statistically significant. Therefore this study does not find conclusive evidence that Auditing Standard No. 5 reduced the cost of the Section 404 audit. The study finds no conclusive evidence that non-accelerated filers systematically avoided accelerated filer status because they expected their Section 404 audit fee premia to be unusually high.

This study makes several contributions. First, these estimates of the Section 404 audit fee premium for first-time accelerated filers will inform policy makers about the regulatory costs for the non-accelerated filers that are scheduled to comply with the independent audit requirement of Section 404 starting December 15, 2009. Second, the study is the first to investigate whether the Section 404 audit fee premium fell in 2007 after Auditing Standard No. 5 was implemented. While the study fails to show that the premium for new accelerated filers fell from 2006 to 2007, it is possible that the new standard will significantly reduce costs after auditors obtain more experience with the new standard. Further research is necessary to investigate the effect of the Auditing Standard No. 5 on audit costs. Finally, the research should be useful to the auditors of

non-accelerated filers in planning how much to increase their resources to perform the Section 404 audits for these clients for the first time.

## REFERENCES

- Atkins, P. 2006. Speech delivered by SEC Commissioner at American Electronics Association Classical Finance Conference. September 20. U.S. Securities and Exchange Commission. Accessed on November 26, 2008 at: <http://www.sec.gov/news/speech/2006/spch110706psa.htm>.
- Beckwith, N., and D. Lehmann. 1975. The importance of halo effects in multi-attribute models. *The Journal of Marketing Research* 12: 265-275.
- Belsey, D., E. Kuh, and E. R. Welsch. 1980. *Regression diagnostics: identifying influential data and sources of collinearity*. Wiley and Sons, New York.
- Burns, J. 2007. SEC seeks rules delay for small companies. *Wall Street Journal* (December 13, 2007): C4.
- Chaney, P., D. Jeter, and L. Shivakumar. 2004. Self-selection of auditors and audit pricing in private firms. *The Accounting Review* 79: 51-72.
- Cox, C. 2007. Speech delivered by SEC Chairman at Annual Meeting of Association of Audit Committee Members. June 1. U.S. Securities and Exchange Commission. Accessed on November 20, 2008 at: <http://www.sec.gov/news/speech/2007/spch060107cc.htm>.
- Çolak, G., and T. Whited. 2006. Spin-offs, divestitures, and conglomerate investment. *The Review of Financial Studies* 20: 557-595.
- CRA International. 2006. *Sarbanes-Oxley Section 404 Costs and Implementation Issues: Spring 2006 Survey Update*. Washington, D.C.: CRA International.
- Craswell, A., J. Francis, and S. Taylor. 1995. Auditor brand name reputation and industry specializations. *Journal of Accounting and Economics* 20: 297-322.
- Dehejia, R., and S. Wahba. 1999. Causal effects in nonexperimental studies: reevaluating the evaluation of training programs. *Journal of the American Statistical Association* 94: 1053-1062.
- Dittmar, A. 2000. Why do firms repurchase stock? *The Journal of Business* 73: 331-355.
- Doyle J., W Ge, and S. McVay. 2007. Accruals quality and internal control over financial reporting. *The Accounting Review* 82: 1141-1170.
- Eldridge, S., and B. Kealey. 2005. SOX costs: Auditor attestation under Section 404. Working paper, SSRN. Available at: <http://ssrn.com/abstract=743285>.

- Financial Executives International. 2006. Sarbanes-Oxley Section 404 Implementation Survey. March. Financial Executives International. Accessed on December 3, 2008 at: [http://www2.financialexecutives.org/news/404\\_survey\\_4\\_6\\_06.cfm](http://www2.financialexecutives.org/news/404_survey_4_6_06.cfm).
- Financial Executives International. 2007. FEI Survey: Management Drives Sarbanes-Oxley Compliance Costs Down by 23%, but Auditor Fees Virtually Unchanged. May 16. Financial Executives International. Accessed on April 30, 2008 at: <http://fei.mediaroom.com/index.php?s=43&item=193>.
- Financial Executives International. 2008. FEI Survey: Average 2007 SOX Compliance Cost \$1.7 Million. April 30. Financial Executives International. Accessed on December 3, 2008 at: <http://fei.mediaroom.com/index.php?s=43&item=204>.
- Francis, J., and C. Lennox. 2008. Selection models in accounting research. Working paper, SSRN. Available at: <http://ssrn.com/abstract=1120796>.
- Ge, W., and S. McVay. 2005. The disclosure of material weakness in internal control after the Sarbanes-Oxley Act. *Accounting Horizons* 18: 137-158.
- Greene, W. 2008. *Econometric Analysis*. Upper Saddle River, N. J.: Pearson/Prentice Hall.
- Heckman, J., H. Ichimura, and P. Todd. 1997. Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme. *The Review of Economic Studies* 64 (Special Issue: Evaluation of Training and Other Social Programmes): 605-654.
- Heckman, J., and S. Navarro-Lozano. 2004. Using matching, instrumental variables, and control functions to estimate economic choice models. *The Review of Economics and Statistics* 86: 30-57.
- Iliev, P. 2008. The effect of the SOX Section 404 compliance on audit fees, earnings quality and stock prices. Working paper, The Pennsylvania State University.
- Jean, S. 2004. Overwhelmed accounting firms focus on big clients, leaving smaller ones behind. *Saint Paul Pioneer Press* (October 19, 2004).
- Krishnan, J., D. Rama, and Y. Zhang. 2008. Costs to comply with SOX Section 404. *Auditing: A Journal of Practice & Theory* 27: 169-186.
- Li, K., and N. Prabhala. 2006. Self-Selection Models in Corporate Finance. Chapter 2 *Handbook of Corporate Finance*. Edited by B.Eckbo. Elsevier.
- Li, X., and X. Zhao. 2006. Propensity score matching and abnormal performance after seasoned equity offerings. *Journal of Empirical Finance* 13: 351-370.

- Maddala, G. 1983. *Limited-Dependent and Qualitative Variables in Econometrics*.  
Econometric Society Monographs: Cambridge University Press.
- Palmrose, Z. 1986. Audit fees and auditor size: Further evidence. *Journal of Accounting Research* 24: 97-110.
- Public Company Accounting Oversight Board. 2005. Report on the Initial  
Implementation of Auditing Standard No. 2, *An Audit of Internal Control Over  
Financial Reporting Performed in Conjunction with an Audit of Financial  
Statements*. PCAOB Release No. 2005-023. November 30. Accessed on November  
20, 2008 at: [http://www.pcaobus.org/Inspections/Other/2005/11-30\\_Release\\_2005-023.pdf](http://www.pcaobus.org/Inspections/Other/2005/11-30_Release_2005-023.pdf).
- Raghunandan, K., and D. Rama. 2006. SOX Section 404 material weaknesses disclosures  
and audit fees. *Auditing: A Journal of Practice & Theory* 25: 99-114.
- Rosenbaum, P., and D. Rubin. 1983. The central role of the propensity score in  
observational studies for causal effects. *Biometrika* 70: 41-55.
- Simunic, D. 1980. The pricing of audit services: Theory and evidence. *Journal of  
Accounting Research* 18: 161-190.
- Sinnett, W. 2007. FEI Survey on Sarbanes-Oxley Section 404 Implementation: May  
2007. Financial Executives International.
- Sneller, L., and H. Langendijk. 2007. Sarbanes Oxley Section 404 costs of compliance:  
A case study. *Corporate Governance: An International Review* 15: 101-111.
- Sullivan, M. 2007. Great migration: How recent events changed the switching behavior  
of top-tier audit clients. Working paper, The George Washington University.
- Villalonga, B. 2004. Does diversification cause the “Diversification discount”? *Financial  
Management* 33: 5-27.
- Whisenant, S., S. Sankaraguruswamy, and K. Raghunandan. 2003. Evidence on the joint  
determination of audit and non-audit fees. *Journal of Accounting Research* 41:  
721-744.

**TABLE 1**  
**Descriptive Statistics for Full Samples**

Variable	2006 Means			2007 Means		
	Accelerated Filers	Non-Accelerated Filers	Difference	Accelerated Filers	Non-Accelerated Filers	Difference
LnFee <sub>t</sub>	13.17	12.31	0.86*	13.25	12.34	0.91*
LnFee <sub>t-1</sub>	12.53	12.24	0.29**	12.73	12.27	0.46*
LnAssets <sub>t</sub>	4.27	3.56	0.71*	4.30	3.53	0.77*
SqSegments <sub>t</sub>	1.35	1.30	0.05	1.33	1.29	0.04
Foreign <sub>t</sub>	0.15	0.16	-0.01	0.17	0.17	0.00
InvRec <sub>t</sub>	0.31	0.36	-0.05	0.31	0.35	-0.04
Big4 <sub>t</sub>	0.35	0.33	0.02	0.58	0.25	0.33*
Initial <sub>t</sub>	0.11	0.14	-0.03	0.03	0.11	-0.08**
Roa <sub>t</sub>	-0.04	-0.10	0.06	-0.04	-0.23	0.19
Loss <sub>t</sub>	0.42	0.61	-0.19*	0.55	0.62	-0.07
Liquidity <sub>t</sub>	2.87	4.18	-1.31	2.88	3.68	-0.80
Cash <sub>t-1</sub>	0.22	0.21	0.01	0.24	0.22	0.02
NewDebt <sub>t-1</sub>	0.50	0.39	0.11***	0.52	0.36	0.16*
Risk <sub>t-1</sub>	0.05	0.02	0.03	0.01	0.02	-0.01
NewStock <sub>t-1</sub>	0.91	0.79	0.12**	0.92	0.76	0.16*
Growth <sub>t-1</sub>	0.25	0.25	0.00	1.63	0.22	1.41*
LnFloat <sub>t-1</sub>	17.59	16.67	0.92*	17.32	16.76	0.56*
Observations	74	591		71	406	

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively. All variables are defined in the Appendix. The subscript i has been dropped from the variable names to simplify the exposition.

**TABLE 2**  
**Correlations**

Panel A: Pearson Correlation Coefficients for 2006

Sample includes 74 accelerated filers and 591 non-accelerated filers

	Acflr <sub>t</sub>	LnFee <sub>t</sub>	LnFee <sub>t-1</sub>	LnAssets <sub>t</sub>	SqSeg- ments <sub>t</sub>	Foreign <sub>t</sub>	InvRec <sub>t</sub>	Big4 <sub>t</sub>	Initial <sub>t</sub>	Roat <sub>t</sub>	Loss <sub>t</sub>	Liquidity <sub>t</sub>	Cash <sub>t-1</sub>	New Debt <sub>t-1</sub>	Risk <sub>t-1</sub>	New Stock <sub>t-1</sub>	Growth <sub>t-1</sub>	LnFloat <sub>t-1</sub>	
Acflr <sub>t</sub>	1.00																		
LnFee <sub>t</sub>	0.33*	1.00																	
LnFee <sub>t-1</sub>	0.12*	0.85*	1.00																
LnAssets <sub>t</sub>	0.19*	0.61*	0.59*	1.00															
SqSegments <sub>t</sub>	0.03	0.22*	0.22*	0.06	1.00														
Foreign <sub>t</sub>	-0.01	0.21*	0.18*	0.06***	0.38*	1.00													
InvRec <sub>t</sub>	-0.06	-0.04	-0.02	-0.04	0.09**	0.07***	1.00												
Big4 <sub>t</sub>	0.02	0.43*	0.43*	0.31*	0.09**	0.10**	-0.16*	1.00											
Initial <sub>t</sub>	-0.03	0.01	0.06	0.01	0.02	0.08***	0.05	-0.06	1.00										
Roat <sub>t</sub>	0.03	0.10*	0.09**	0.33*	-0.00	-0.03	0.17*	0.03	0.02	1.00									
Loss <sub>t</sub>	-0.12*	-0.02	0.04	-0.27*	0.05*	0.00	-0.17*	-0.05	0.01	-0.25*	1.00								
Liquidity <sub>t</sub>	-0.01	-0.09**	-0.08***	-0.02	-0.02	-0.02	-0.07***	-0.02	-0.02	0.00	0.03	1.00							
Cash <sub>t-1</sub>	0.01	-0.07***	-0.07***	-0.28*	0.07***	-0.00	-0.46*	0.14*	-0.08**	-0.19*	0.20*	0.16*	1.00						
NewDebt <sub>t-1</sub>	0.07***	0.16*	0.20*	0.20*	-0.04	-0.02	-0.03	0.03	0.04	0.01	0.03	-0.05	-0.23*	1.00					
Risk <sub>t-1</sub>	0.06	0.02	0.02	-0.05	-0.06	-0.02	-0.14*	0.06	-0.04	-0.01	0.06***	-0.01	0.16*	-0.06	1.00				
NewStock <sub>t-1</sub>	0.09**	0.16*	0.14*	0.02	0.10*	0.06	-0.05	0.08**	0.01	0.01	0.01	-0.07***	0.19*	0.02	0.08**	1.00			
Growth <sub>t-1</sub>	-0.00	-0.05	-0.07***	-0.09**	-0.07***	-0.07***	-0.05	-0.03	0.03	-0.04	0.08**	-0.00	0.07***	0.01	-0.01	0.06	1.00		
LnFloat <sub>t-1</sub>	0.27*	0.35*	0.29*	0.36*	0.14*	0.10**	-0.18*	0.21*	-0.06	0.01	-0.18*	-0.00	0.21*	-0.05	0.06	0.37*	0.05	1.00	

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively. All variables are defined in the Appendix. The subscript i has been dropped from the variable names to simplify the exposition.



Panel B: Pearson Correlation Coefficients for 2007

Sample includes 71 accelerated filers and 406 non-accelerated filers

	Acflr <sub>t</sub>	LnFee <sub>t</sub>	LnFee <sub>t-1</sub>	LnAssets <sub>t</sub>	SqSeg- ments <sub>t</sub>	Foreign <sub>t</sub>	InvRec <sub>t</sub>	Big4 <sub>t</sub>	Initial <sub>t</sub>	Roa <sub>t</sub>	Loss <sub>t</sub>	Liquidity <sub>t</sub>	Cash <sub>t-1</sub>	New Debt <sub>t-1</sub>	Risk <sub>t-1</sub>	New Stock <sub>t-1</sub>	Growth <sub>t-1</sub>	LnFloat <sub>t-1</sub>	
Acflr <sub>t</sub>	1.00																		
LnFee <sub>t</sub>	0.41*	1.00																	
LnFee <sub>t-1</sub>	0.22*	0.86*	1.00																
LnAssets <sub>t</sub>	0.25*	0.62*	0.57*	1.00															
SqSegments <sub>t</sub>	0.03	0.20*	0.20*	0.08***	1.00														
Foreign <sub>t</sub>	0.00	0.10**	0.13*	0.02	0.38*	1.00													
InvRec <sub>t</sub>	-0.07	0.01	0.00	0.04	0.09**	0.06	1.00												
Big4 <sub>t</sub>	0.26*	0.49*	0.45*	0.34*	0.05	0.04	-0.12*	1.00											
Initial <sub>t</sub>	-0.10**	-0.11**	-0.04	-0.07	-0.03	-0.05	0.05	-0.09***	1.00										
Roa <sub>t</sub>	0.05	0.17*	0.09**	0.43*	0.06	0.02	0.16*	0.07	0.01	1.00									
Loss <sub>t</sub>	-0.05	0.05	0.11**	-0.22*	-0.00	-0.02	-0.18*	-0.05	-0.00	-0.18*	1.00								
Liquidity <sub>t</sub>	-0.02	-0.11**	-0.12**	-0.02	-0.02	-0.02	-0.09***	-0.02	-0.01	0.02	0.03	1.00							
Cash <sub>t-1</sub>	0.04	-0.12*	-0.10**	-0.29*	0.04	0.03	-0.47*	0.12*	-0.00	-0.18*	0.20*	0.23*	1.00						
NewDebt <sub>t-1</sub>	0.12*	0.12*	0.15*	0.15*	-0.05	-0.03	-0.03	0.01	-0.02	-0.02	-0.05	-0.07	-0.26*	1.00					
Risk <sub>t-1</sub>	-0.03	0.03	0.04	-0.04	-0.05	0.01	-0.10**	0.11**	-0.00	-0.00	0.01	-0.01	0.13*	-0.09**	1.00				
NewStock <sub>t-1</sub>	0.14*	0.07	0.08***	-0.00	0.09**	0.09***	-0.05	0.09***	-0.10**	0.05	-0.06	-0.08***	0.11**	0.05	0.08***	1.00			
Growth <sub>t-1</sub>	0.17*	0.03	-0.04	-0.01	-0.06	-0.03	0.01	0.06	0.02	0.02	0.07	0.00	0.08***	-0.01	-0.01	0.02	1.00		
LnFloat <sub>t-1</sub>	0.14*	0.17*	0.12**	0.14*	0.11**	0.07	-0.08***	0.13*	-0.03	0.05	-0.09***	0.00	0.16*	-0.05	0.03	0.23*	0.07	1.00	

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively. All variables are defined in the Appendix. The subscript *t* has been dropped from the variable names to simplify the exposition.

**TABLE 3**  
**Probit Model:**  
**The Likelihood of Being an Accelerated Filer**

$$Acflr_t = \beta_0 + \beta_1 LnFee_{t-1} + \beta_2 LnAssets_t + \beta_3 SqSegments_t + \beta_4 Foreign_t + \beta_5 InvRec_t + \beta_6 Big4_t + \beta_7 Initial_t + \beta_8 Roa_t + \beta_9 Loss_t + \beta_{10} Liquidity_t + \beta_{11} Cash_{t-1} + \beta_{12} NewDebt_{t-1} + \beta_{13} Risk_{t-1} + \beta_{14} NewStock_{t-1} + \beta_{15} Growth_{t-1} + \beta_{16} LnFloat_{t-1} + \xi$$

(1)

Variable	Coefficients	
	2006 Sample	2007 Sample
Intercept	-15.89*	-6.35*
LnFee <sub>t-1</sub>	-0.04	0.09
LnAssets <sub>t</sub>	0.24**	0.34*
SqSegments <sub>t</sub>	0.05	0.02
Foreign <sub>t</sub>	-0.21	-0.09
InvRec <sub>t</sub>	-0.06	-0.23
Big4 <sub>t</sub>	-0.34**	0.46**
Initial <sub>t</sub>	-0.13	-0.45
Roa <sub>t</sub>	-0.11	0.19
Loss <sub>t</sub>	-0.17	-0.09
Liquidity <sub>t</sub>	-0.00	-0.02
Cash <sub>t-1</sub>	0.11	0.75
NewDebt <sub>t-1</sub>	0.27***	0.30***
Risk <sub>t-1</sub>	0.40	-0.64
NewStock <sub>t-1</sub>	0.21	0.67*
Growth <sub>t-1</sub>	-0.01	0.15*
LnFloat <sub>t-1</sub>	0.82*	0.12**
Log likelihood	-184.47	-158.45
LR $\chi^2$	95.46	84.46
Observations	665	477
Pseudo R <sup>2</sup>	0.21	0.21

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively. All variables are defined in the Appendix. The results of the probit model are used to compute propensity scores, the estimated probability of being an accelerated filer. The results are also used to estimate the inverse Mills ratios, which are used in the audit fee regressions, model 2.

The subscript i has been dropped from the variable names to simplify the exposition.

**TABLE 4**  
**Descriptive Statistics for Matched Samples**

Variable	<u>2006 Means</u>			<u>2007 Means</u>		
	Accelerated Filers	Non-Accelerated Filers	Difference	Accelerated Filers	Non-Accelerated Filers	Difference
LnFee <sub>t</sub>	13.17	12.68	0.49*	13.27	12.72	0.55*
LnFee <sub>t-1</sub>	12.53	12.59	-0.06	12.75	12.59	0.16
LnAssets <sub>t</sub>	4.23	4.33	-0.10	4.32	4.28	0.04
SqSegments <sub>t</sub>	1.35	1.40	-0.05	1.34	1.28	0.06
Foreign <sub>t</sub>	0.15	0.17	-0.02	0.17	0.07	0.10***
InvRec <sub>t</sub>	0.31	0.32	-0.01	0.30	0.32	-0.02
Big4 <sub>t</sub>	0.37	0.45	-0.08	0.57	0.52	0.05
Initial <sub>t</sub>	0.11	0.10	0.01	0.03	0.07	-0.04
Roa <sub>t</sub>	-0.04	-0.01	-0.03	-0.04	-0.08	0.04
Loss <sub>t</sub>	0.44	0.42	0.02	0.54	0.52	0.02
Liquidity <sub>t</sub>	2.90	2.84	0.06	2.76	2.52	0.24
Cash <sub>t-1</sub>	0.22	0.23	-0.01	0.23	0.23	0.00
NewDebt <sub>t-1</sub>	0.49	0.45	0.04	0.52	0.65	-0.13
Risk <sub>t-1</sub>	0.06	0.06	0.00	0.01	0.01	0.00
NewStock <sub>t-1</sub>	0.90	0.93	-0.03	0.91	0.93	-0.02
Growth <sub>t-1</sub>	0.25	0.21	0.04	0.56	0.67	-0.11
LnFloat <sub>t-1</sub>	17.57	17.57	0.00	17.31	17.26	0.05
Observations	71	71		69	69	

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively. All variables are defined in the Appendix. The matched samples are created by matching each accelerated filer to the non-accelerated filer with the closest propensity score. The subscript *i* has been dropped from the variable names to simplify the exposition.

**TABLE 5**  
**Audit Fee Regressions Controlling for Selectivity**

$$\begin{aligned} \text{LnFee}_t = & \alpha_0 + \alpha_1 \text{LnFee}_{t-1} + \alpha_2 \text{LnAssets}_t + \alpha_3 \text{SqSegments}_t + \alpha_4 \text{Foreign}_t \\ & + \alpha_5 \text{InvRec}_t + \alpha_6 \text{Big4}_t + \alpha_7 \text{Initial}_t + \alpha_8 \text{Roat}_t + \alpha_9 \text{Loss}_t + \alpha_{10} \text{Liquidity}_t \\ & + \alpha_{11} \text{IMR}_{jt} + \varepsilon_t \end{aligned} \quad (2)$$

**Panel A: OLS Regression for Accelerated Filers (n=71)**

Variable	2006		2007	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	4.92	4.72*	4.05	3.88*
LnFee <sub>t-1</sub>	0.70	8.43*	0.67	7.35*
LnAssets <sub>t</sub>	-0.04	-0.36	0.16	2.05**
SqSegments <sub>t</sub>	-0.15	-1.14	-0.06	-0.58
Foreign <sub>t</sub>	0.25	1.28	0.09	0.71
InvRec <sub>t</sub>	0.02	0.08	0.23	1.00
Big4 <sub>t</sub>	0.30	2.08**	-0.01	-0.07
Initial <sub>t</sub>	-0.02	-0.11	-0.46	-1.50
Roat <sub>t</sub>	-0.02	-0.13	0.20	0.97
Loss <sub>t</sub>	0.14	1.06	0.08	0.73
Liquidity <sub>t</sub>	-0.01	-0.79	0.01	0.67
IMR <sub>A</sub>	-0.26	-1.57	-0.03	-0.17
Adjusted R <sup>2</sup>	0.76		0.76	
F-Statistic	20.90		20.57	
p-value	0.00		0.00	

**Panel B: OLS Regression for Non-Accelerated Filers (n=69)**

Variable	2006		2007	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	2.62	3.23*	4.09	3.16*
LnFee <sub>t-1</sub>	0.76	10.28*	0.60	4.87*
LnAssets <sub>t</sub>	0.08	1.39	0.14	1.68***
SqSegments <sub>t</sub>	0.07	0.85	0.23	1.64
Foreign <sub>t</sub>	0.12	1.05	-0.04	-0.19
InvRec <sub>t</sub>	0.26	1.33	0.28	1.08
Big4 <sub>t</sub>	-0.04	-0.44	0.17	1.26
Initial <sub>t</sub>	-0.00	-0.02	0.34	1.47
Roat <sub>t</sub>	0.27	1.23	-0.08	-0.43
Loss <sub>t</sub>	-0.01	-0.10	0.06	0.42
Liquidity <sub>t</sub>	-0.01	-0.81	-0.08	-2.73*
IMR <sub>NA</sub>	0.02	0.08	-0.25	-0.72

Adjusted R <sup>2</sup>	0.84	0.67
F-Statistic	33.57	13.70
p-value	0.00	0.00

\*, \*\*, \*\*\* Significant at the 1%, 5% and 10% levels, respectively.

IMR<sub>A</sub> is the inverse mills ratio for accelerated filers and IMR<sub>NA</sub> for non-accelerated filers. See the Appendix for definition of other variables.

The subscript i has been dropped from the variable names to simplify the exposition.

**TABLE 6**  
**Summary Statistics for PremShare, Audit Fee Premium as a Share of Total Audit Fee**

	<b>2006</b>	<b>2007</b>	<b>Difference in Means</b>	<b>t-statistic</b>	<b>Wilcoxon Rank Sum Test</b>
Mean	0.36	0.32	0.04	-0.83	-0.89 (z-statistic)
25%	0.24	0.15			
50%	0.42	0.37			
75%	0.56	0.51			
Observations	71	69			

PremShare is the Section 404 audit fee premium for an accelerated filer divided by the accelerated filer's total audit fee.

The p-values for the t-statistic and z-statistic are 0.20 and 0.19, respectively, using 1-tailed tests.

## Appendix Description of Variables

### Dependent Variables

Variable	Description
Acflr <sub>t</sub>	An indicator variable that equals 1 if the firm became an accelerated filer in year t and equals zero if the firm remained a non-accelerated filer (Audit Analytics)
LnFee <sub>t</sub>	The log of audit fee plus audit related fees (Audit Analytics) for current year

### Audit Fee Determinants

Variable	Description
LnFee <sub>t-1</sub>	The natural log of the previous year's audit fee plus audit related fee (Audit Analytics)
LnAssets <sub>t</sub>	The natural log of total assets for current year (Data6) (AT)
SqSegments <sub>t</sub>	The square root of geographic segments during the current year (Compustat Segments)
Foreign <sub>t</sub>	A measure of foreign activity where an indicator variable equals 1 if foreign currency gain or loss (Data150) (FCA) is non-zero during the current year, otherwise 0
InvRec <sub>t</sub>	The ratio of inventory (Data3) (INVT) and receivables (Data2) (RECT) to total assets (Data6) (AT) for the current year
Big4 <sub>t</sub>	An indicator variable equal to 1 if the firm is audited by a Big 4 auditor in the current year, otherwise 0
Initial <sub>t</sub>	An indicator variable equal to 1 if the auditor is in the first year of engagement, otherwise 0
Roa <sub>t</sub>	Return on assets for the current year, or operation income (Data178) (OIADP) to assets (Data6) (AT)
Loss <sub>t</sub>	An indicator variable equal to 1 if net income (Data172) (NI) in current year or prior year is less than zero, otherwise 0
Liquidity <sub>t</sub>	The ratio of current assets (Data4) (ACT) to current liabilities (Data5) (LCT)

### Avoidance and Control Variables

Variable	Description
Cash <sub>t-1</sub>	Cash and short-term investments at the end of the prior year (Data1) (CHE)
NewDebt <sub>t-1</sub>	An indicator variable equal to 1 if company issued new debt in previous year (Data111) (DLTIS), otherwise 0
Risk <sub>t-1</sub>	An indicator variable equal to 1 if SIC code of 2833-2836, 3570-3577, 3600-3674, 5200-5961, or 7370 in previous year, otherwise 0
NewStock <sub>t-1</sub>	An indicator variable equal to 1 if company issued new equity in previous year (Data108) (SSTK), otherwise 0
Growth <sub>t-1</sub>	Growth in sales (Data12) (SALE) = (Sales <sub>t-1</sub> / Sales <sub>t-2</sub> ) - 1
LnFloat <sub>t-1</sub>	The natural log of public float at the end of the 2nd quarter of the previous year, based on a review of 10-Ks