

**HOW DO AUDITORS VIEW MANAGERS' DISCLOSURE STRATEGY? THE EFFECT
OF EARNINGS GUIDANCE ON AUDIT FEES**

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Abstract

This paper examines whether audit clients' earnings forecasting policy is associated with audit fees. We find that clients that are more likely to issue an earnings forecast, and those that issue a greater frequency of forecasts in a particular year, pay higher audit fees. Furthermore, among the forecasting clients, we find audit fees to be higher when management earnings forecasts and analyst forecasts are more optimistically biased. In addition, audit fees are higher when the management forecasts have longer horizon. These results are consistent with the argument that auditors view clients that make forecasts (particularly those whose forecasts are optimistic) to be of higher risk. These results highlight an important potential cost of voluntary disclosures, and they further enrich our understanding of how auditors price their audits.

Keywords: *Audit fees, Inherent risk, Fraud risk, Management earnings forecasts, Analyst forecasts.*

Data Availability: All data employed in this study are commercially available from sources described in the text.

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1. INTRODUCTION

Though there is a large body of literature on voluntary disclosure by managers there is very little empirical evidence on whether and how auditors consider managers' disclosure strategies in their assessment of a client's audit risk. The objective of this study is to examine the effects of corporate voluntary disclosure strategies on audit pricing. Specifically, we examine whether firms that are more likely to issue frequent, optimistic, long-horizon, and more precise management earnings forecasts, have higher audit fees.

Auditors could consider firms issuing management earnings forecasts to be of higher audit risk for several reasons. First, they could perceive these firms to be more likely to engage in efforts to "hype up" the company's stock and engage in aggressive earnings management, increasing the risk of financial statement misstatements (Lang and Lundholm (2000)). Support of this argument comes from *Montgomery's Auditing*, an influential auditing manual used by some of the Big Four Accounting Firms, which specifically mentions "unduly aggressive earnings targets" as a factor contributing to the increased risk of fraud (O'Reilly et al. (1998)). Academic research linking earnings forecasts to earnings management includes Jaggi and Sannella (1995) and Kasznik (1999) who find that managers that made overoptimistic earnings forecasts also managed reported earnings toward these forecasts. In other words, inherent risk is higher for an audit client that issues an earnings forecast and even more so for a client that issues an optimistic forecast relative to a client that does not issue an earnings forecast. Thus, the overall audit risk is expected to be higher for clients that issue earnings forecasts. Auditors could respond to a higher assessment of risk of clients' accounting misstatements in two ways.

Auditors could either increase their effort in order to reduce their fraud risk exposure, or alternatively, auditors could charge higher fees in order to compensate themselves for the additional fraud risk. In both of these cases, an auditor charges higher audit fees.

Second, auditors could directly perceive the risk of litigation to be higher for firms that issue earnings forecasts. Earnings forecasting behavior has been associated with litigation risk in a number of papers including, Baginski et al. (2002), that show that U.S. firms issue earnings forecasts less frequently than the firms in Canada, which is a less litigious country. Similarly, Johnson et al. (2001) report that firms that are subject to a high litigation risk are more likely to issue earnings forecast after the passage of the Private Securities Litigation Reform Act of 1995. More direct evidence is provided by Brown et al. (2005) who show that the risk of class action securities litigation is positively associated with the likelihood of issuing management earnings forecasts. The fact that management earnings forecasts are still not widespread, even after the Litigation Reform Act of 1995, suggests that costs of such forecasts (including litigation costs) are still of concern to the management. Lawsuits against the audit client have a direct bearing on the auditor's business risk, i.e., the risk that the auditor will suffer harm because of a client relationship (Arens and Loebbecke (2000)).¹ Finally, management forecasts could increase audit fees due to the additional effort required to review forecasts that are included in press releases.

Consistent with the above arguments we conjecture that audit clients that issue earnings forecasts would be charged higher fees to compensate for the higher risk to the auditor. We would also expect the fees to increase with forecast optimism, as greater forecast optimism could

¹ Skinner (1994), among others, have argued that earnings forecasts decrease forecasting firms' litigation risk, in which case audit fees would be negatively associated with the likelihood of issuing an earnings forecast. Auditors may also view the issuance of earnings forecast as outside their realm of responsibility as these don't have to be audited, and the safe harbor rules protect the management and particularly the auditor from lawsuits relating the accuracy of the forecasts. If this is true, this would bias us against finding a positive association between the two. We note that the risk of litigation may not arise from the issuance and accuracy of the forecast per-se, but that it may indicate certain type of management behavior that the auditor may consider to be adding to its risk exposure.

be indicative of more aggressive behavior of the management and hence could be associated with a higher risk of litigation or regulatory investigation. We also examine whether audit fees are positively associated with management forecast horizon and precision. Long horizon forecasts are based on limited information and may have a higher chance of being inaccurate. If managers have incentives to manage earnings to meet their forecasts, long horizon forecasts may necessitate more earnings management. More precise forecasts could be more difficult to meet, or could signal managerial over-confidence (Hribar and Yang (2006)).

Finally, we also examine whether, in addition to management forecast optimism, audit fees are positively associated with analyst forecast optimism. Analyst forecast optimism is affected by management disclosure policies, and thus could be also viewed as an additional fraud risk factor by auditors.

Using a sample of 22,505 firm-year observations representing all firms with audit fee data in *Audit Analytics* over the period 1999-2005, we find that the likelihood of issuing an earnings forecast is positively associated with audit fees, controlling for other determinants of audit fees identified in prior work. We obtain similar results when we look at the frequency of earnings forecasts issued instead. These results are consistent with our predictions. These results are robust to controlling for a possible self-selection bias arising from focusing on forecasting firms only.

We also run additional tests on several sub-samples of forecasting firms only, ranging in size from 6,362 to 7,691 observations, and we find that as the forecast horizon gets longer, audit fees increase, and, as the management earnings forecast and analyst forecasts' optimism increases, audit fees also increases. These results suggest that auditors perceive these forecasts characteristics as additional risk factors.

To the best of our knowledge, this is the first study that develops a link between two distinct strands of accounting research – the literature on management earnings forecasts and the literature on audit pricing. Several papers (e.g. Clarkson (2000) and Dunn and Mayhew (2004)) examine how audit quality affects firm’s disclosure policies, but our paper provides the first link explaining how firm disclosure choices affect audit pricing. By developing this link, our paper contributes to the existing literature in a number of important ways. First, the literature on voluntary disclosures have highlighted a number of important benefits of such disclosures including a reduction in the disclosing firm’s cost of capital and improvements in liquidity (e.g., Welker (1995); Botosan (1997); Sengupta (1998); Graham et al. (2005); and Pevzner (2007)). Despite these suggested benefits, many firms continue to disclose little beyond what they are required to disclose. In the context of management forecasts, a large proportion of the actively traded firms rarely issue these forecasts and some well-known companies, such as Coca-Cola, have recently ceased to issue earnings forecasts (Chen et al. (2005) and Houston et al. (2005)). These empirical results suggest that potential costs of issuing earnings forecasts are important, and that firms choosing to make the forecasts do so because for them the benefits exceed the costs. Existing empirical research provides limited evidence on the potential costs of disclosures. In this paper we document some results that support the notion that voluntary disclosures may in fact impose costs to the disclosing firm in the form of higher audit fees. This is a potential disclosure cost that has not been previously explored in the literature and this could be a reason why earnings forecasts are not that prevalent.²

² Voluntary disclosures could also be low if the perceived benefits from such disclosures are low. Some recent studies call into question the ultimate benefit of voluntary disclosures. Thus, Francis et al. (2008) shows that voluntary disclosures have no cost of capital reducing benefits incremental to accruals quality. In addition, Pevzner (2007) shows that liquidity benefits associated with earnings forecasting appear to be very small and short-lived.

Second, our study contributes to the literature on audit pricing by documenting how management's disclosure behavior can affect auditors' risk perception. This contribution is important because auditors are in the spotlight in the wake of several high-profile accounting scandals. Thus, evidence on the relation between audit pricing and management earnings forecast could contribute to our understanding of how auditors perceive risks associated with earnings forecasts and how they communicate their perceptions to managers and capital market participants via audit pricing.

The rest of this paper is organized as follows. The next section develops the hypotheses. Section 3 describes our research design and the empirical model. Sample selection is discussed in section 4. Section 5 presents the results and section six concludes.

2. HYPOTHESIS DEVELOPMENT

2.1 Audit fees model

Under the basic audit fee model introduced by Simunic (1980), audit fees are given by:

$$E(c) = cq + E(d)*E(\theta) \quad (1),$$

where c is the auditor's per unit opportunity cost of conducting the audit, q is the number of resources the auditor utilizes for conducting the audit (audit effort), $E(d)$ is the expected present value of possible future losses to the client's stakeholders that may result from this period's audit of financial statements, and $E(\theta)$ is the likelihood that the auditor will have to pay for the losses arising from this period's financial statements. The component $E(d)*E(\theta)$, therefore, represents the present value of expected losses to the auditor from being involved with the company's audit. Typically, these losses arise from litigation. These losses usually are monetary in nature, although a loss of reputation can be another important consequence. As the model indicates, higher the expected losses from being involved with the audit, the higher should

be the fees. Higher fees could be charged either as a premium to cover the auditor's expected litigation or reputation losses, or to compensate the auditor for the additional audit effort required to reduce the risks to acceptable levels,.

2.2 Management Earnings Forecasts and Audit Fees

Because their client firms are viewed to pose higher fraud risk, auditors could assess their risks to be higher. Within the scope of a regular audit, auditors are concerned with frauds that lead financial statements to be misstated, or frauds that lead to misappropriation of assets (SAS 99). Auditors are required to assess fraud risk under SAS 82/99, and design audit procedures to address risks of fraud (O'Reilly et al., (1998)). *Montgomery's Auditing* specifically urges to auditors to consider aggressive internally-set earnings targets as a potential fraud risk factor (O'Reilly et al., page 4-8). A management earnings forecast can be viewed as an *announced* internally-set earnings target. Jensen (2002) argues that management forecasts contribute to managerial myopia, with tendencies to just beat short-term earnings targets, instead of focusing on long-term value creation. Such myopia can also create incentives to opportunistically manage earnings and, possibly, commit accounting fraud. Indeed, a number of high-profile cases of accounting fraud specifically mention internally-set earnings targets as a factor contributing to the occurrence of fraud. For example, in a federal securities fraud court case of SEC vs. Schiff and Lane, dealing with accounting fraud in Bristol-Myers Squibb, the SEC alleges as follows:

At Schiff and Lane's direction, BMS used financial incentives to induce wholesalers to buy its pharmaceutical products in excess of prescription demand (excess inventory) in order to *artificially inflate its results to meet its internal earnings targets* and the consensus earnings estimates of Wall Street securities analysts (channel-stuffing).³

³ <http://www.sec.gov/litigation/complaints/comp19343.pdf>

In addition, some academic research evidence supports the link between management forecasts and earnings management tendencies, or tendencies to opportunistically increase stock prices. Kasznik (1999) found that companies that made optimistic forecasts have significantly higher discretionary accruals in that year. Finally, Brown, et al (2005) found litigation risk to be positively associated with the likelihood of issuing management forecasts. In addition, Chen (2004) finds that forecasting firms that cannot meet their own forecasts tend to have less discretion over their accruals. Higher accruals are associated with higher likelihood of accounting fraud (Dechow et al. (2008) and Richardson et al. (2003)). Lang and Lundholm (2000) provide evidence that managers sometimes use voluntary disclosures to “hype up” their firms’ stocks prior to equity offerings. A large volume of literature that links the risk of earnings management with higher audit risk and consequently higher audit fees (Henninger (2001); Bell et al. (2001); Seethamaran et al. (2002); Gul et al. (2003)). These studies further support the conjecture that earnings forecasting could be associated with audit fees.

In addition to the increased risk of earnings management, earnings forecast - if not subsequently met - can reduce the credibility of management’s overall disclosure causing further scrutiny from analysts and regulators, resulting in securities litigation, or SEC investigations. When faced with litigation or SEC sanctions, the auditor may suffer losses “by association”, i.e. also an auditor could lose reputational capital if their client gets sued. The fact that the fear of legal liability is a concern when issuing earnings forecasts, even after the passage of Safe Harbor laws, is evidenced from Baginski et al. (2002) which showed that Canadian firms are more likely to issue earnings forecasts compared to US firms presumably because the threat of legal liability is greater in the US. Similarly Johnson et al. (2001) showed that there was a significant increase in the number of forecasts issued by firms after the passage of Private Securities Litigation Act

of 1995 that reduced firms' legal exposure to class action lawsuits in the US. PSLRA significantly reduced firm's litigation exposure for ex-post biased management forecasts, but did so only in federal courts (Brown et al. (2005)). In addition, Lang and Lundholm (2000) show that some firms increase their voluntary disclosures prior to equity offerings in order to "hype up" their stock prices. Such firms suffer from significant price declines at offering announcements. Because significant stock price drops are a litigation risk factor, opportunistic use of earnings forecasts exposes auditors to litigation risk as well.

Finally, management earnings forecasts are often made in press releases and are accompanied by other financial information. Even though the auditor is not responsible for the fairness of management forecasts, and does not opine on them, the auditor typically reviews this information as part of the press release.⁴ Consequently fees could be higher at the margin due to the additional effort involved in reviewing the forecasts.

Going back to equation (1), taken together, the above arguments suggest that higher level of management earnings forecasting results in auditors' a) increasing the amount of time spent on doing the audit due to either higher perceived fraud risk and/or due to having to comply with SAS 8 review requirements, and b) increasing the fees due to higher perceived fraud/litigation risk. These arguments suggest that management earnings forecasts are positively associated with audit fees.

⁴ The auditor is required to review voluntary disclosures under SAS 8. More specifically, SAS 8 states:

"The auditor's responsibility with respect to information in a document does not extend beyond the financial information identified in his report, and the auditor has no obligation to perform any procedures to corroborate other information contained in a document. *However, he should read the other information and consider whether such information, or the manner of its presentation, is materially inconsistent with information, or the manner of its presentation, appearing in the financial statements. If the auditor concludes that there is a material inconsistency, he should determine whether the financial statements, his report, or both require revision. If he concludes that they do not require revision, he should request the client to revise the other information* (emphasis added). If the other information is not revised to eliminate the material inconsistency, he should consider other actions such as revising his report to include an explanatory paragraph describing the material inconsistency, withholding the use of his report in the document, and withdrawing from the engagement."

There could be an alternate view of the potential impact of management earnings forecasts on audit fees. Some research indicates that companies make earnings forecasts to preempt bad news in an effort to reduce litigation risk (Skinner (1994)). These results do not imply that companies that issue forecasts have lower litigation risk, as compared to those that do not, but if that were the case, a negative association between management forecasts and audit fees could exist. Based on much of the literature cited above, we argue that management forecasts would be considered to be increasing, rather than decreasing, audit risk factor, and consequently all our hypotheses are set up in alternate form. Our first hypothesis relating to the impact of forecast issuance is:

H1: Audit fees are higher for firms that issue management earnings forecasts, relative to firms that do not issue an earnings forecast.

If management earnings forecasts are considered to be costly to auditors, they would also charge higher fees to firms that issue forecasts more *frequently* leading us to our second hypothesis:

H2: Audit fees are higher for firms that have a greater frequency of management earnings forecasts issued.

Investor litigation and SEC investigations are more likely to be initiated when a company's forecasts are not met and the market is disappointed by the actual performance of the company that falls short of management forecasts. Thus, additional litigation risk would arise when management's forecasts fall short of the actual, and risk would be the higher, the higher the shortfall. Defining forecast optimism as the scaled difference between the forecasted EPS and

the actual EPS, we argue that greater the optimism, the higher would be the litigation risk.⁵ This conjecture is supported by the arguments in the SEC's case against Bristol Myers' managers that we mention above. In addition, Hribar and Yang (2006) show that more over-confident managers issue more optimistic management forecasts. To the extent that managerial aggressiveness is a contributing fraud risk factor, auditors should insure themselves against this risk either through additional audit effort, or through charging higher risk premium. This leads us to the next hypothesis:⁶

H3: Audit fees are higher for firms that issue more optimistic earnings forecasts.

As a firm gets closer to the end of its accounting period, it is better able to estimate the earnings for that period, so that management earnings forecasts made earlier in the accounting period are likely to be less accurate, as compared to those made later in the accounting period. If the lack of management forecast accuracy increases the likelihood of a lawsuit against a forecasting firm, longer horizon forecasts could increase such risks and consequently auditor's business risk and audit fees charged. Prior work by Baginski and Hassell (1997) used this measure to proxy for greater earnings uncertainty and the unobservable precision of managers' beliefs. Brown et al. (2005) provides evidence to show that management forecasts that are issued earlier are associated with higher litigation risk. This leads us to the following hypothesis:

H4: Audit fees are higher, the longer the management earnings forecast horizon.

⁵ Note that forecast error, as we define it, incorporates the magnitude of error in the forecasts as well as the optimistic bias of the forecast.

⁶ It is possible that the stock market discounts the effects of the management earnings forecast bias (Williams, 1996, Rogers and Stocken, 2005, Hutton and Stocken, 2007) in which case litigation risk from such forecasts could be low and auditors may not be concerned about the bias. In this case management forecast bias would have no impact on audit fees.

Our next hypothesis links audit fees to management earnings forecast precision. Two possibilities exist here: one, supported by limited evidence in Brown et al. (2005) is that more precise forecasts are associated with greater litigation risk, and thus audit fees have to be higher for firms with more precise forecasts. This hypothesis is also supported by intuition that firms with more precise forecasts might have greater incentives to meet their own forecasts and may manage earnings to greater extent. This argument is also supported by Hribar and Yang (2006) who find that more over-confident managers issue more precise forecasts. Thus, our hypothesis is:

H5: Audit fees are higher for firms with more precise management earnings forecasts.

On the other hand, it is also possible that only firms with higher quality accounting systems issue more precise forecasts. In other words, only if managers feel very comfortable issuing a more precise forecast, do they do so. Thus, auditors could perceive more precise forecasts as indicators of more reliable accounting numbers and charge lower fees. This conjecture would suggest a negative association between forecast precision and audit fees.

2.3 Analyst forecasts and audit fees

Until now we had exclusively focused on management's earnings guidance, but many companies depend on financial analysts to disseminate its financial information to market participants. Financial analysts are major "consumers" of all financial disclosures, including management earnings guidance. Research shows that they revise their forecasts in response to management guidance (Baginski and Hassel (1990)). Research also shows that management forecasts are used to correct potentially erroneous analyst beliefs, and in particular to guide analyst forecasts to beatable levels (Cotter et al. (2006)). Therefore, analyst forecasts could be considered to be reflective of management's disclosure efforts. If managerial disclosures to

financial analysts are unduly optimistic, analyst forecasts may also be unduly optimistic, increasing the risk of litigation, and increasing auditors' concern with potential future litigation. Failure to meet analyst forecasts is associated with substantial future stock price drops (Brown and Caylor (2005)), increasing probability of security litigation against a firm, and, indirectly, against the auditor. Analyst forecast optimism could be attributed to lack of adequate disclosures on management's part to guide the market to realistic expectations, or could be the by-product of overall managerial over-confidence in the form of optimistically biased disclosures. In either case, we would expect audit fees to be higher which leads us to the last hypothesis:

H6: Audit fees are higher for firms with greater analyst forecast optimism.

3. RESEARCH DESIGN

3.1 The audit fee model

We test the hypotheses above using two different regressions of the form:

$$\text{Log of audit fees} = f(\text{Management's forecasting propensity, controls}) \quad (2)$$

$$\text{Log of audit fees} = f(\text{Management/Analyst forecast properties, controls}) \quad (3)$$

The first model uses all available observations (forecasting firms as well as non-forecasting firms are included) whereas the second model is estimated using the sample of forecasting firms only. We use two measures of disclosures to capture effects of management's disclosure propensity on audit fees. In order to capture the main effect of the likelihood of issuing earnings forecasts on audit fees we look at forecast occurrence defined as:

FC = an indicator variable that equals 1, if the company issued one or more earnings forecasts during the year; 0 otherwise;

NFORECAST = the number of earnings forecasts issued by a company in the current fiscal year (non-forecasting firms are coded 0). When several forecasts are issued on the same date, we only count the forecast once.

Both measures capture management's tendencies to issue earnings forecasts. The first measure just distinguishes forecasting firms from the others, whereas the second measure puts more weight on firms that make more forecasts during the year. In order to perform the tests, we merge our management forecast sample with all other (non-forecast) firms for which we could get requisite financial data. Control firms are matched with the forecasting firms by fiscal period end.

For tests of management forecast properties (model 2), we look at the effects of management forecast optimism, forecast horizon, forecast precision, and analysts' forecast optimism, on audit fees. These management forecast properties are defined as:

MGOPTIMISM = Average ex-post forecast optimism over the prior year, where forecast optimism is defined as management's forecasted EPS minus the actual EPS reported in *Compustat*, deflated by the share price at the beginning of the fiscal period. Only point and closed range forecasts are included in this variable. For closed range forecasts, a mid-point of the range is taken as the forecast estimate;

HORIZON = The average forecast horizon of all forecasts issued by a firm during the year. Forecast horizon is the number of days prior to the fiscal period end the forecast is made;

PRECISION = Ratio of the number of point and closed range forecasts issued during the fiscal year, to the total number of forecasts issued by the company during the fiscal year;

ANOPTIMISM = The average analyst forecast optimism calculated over the fiscal year where forecast optimism is defined as the difference between *IBES* actual earnings and *IBES* analyst forecast, deflated by the beginning of the quarter *Compustat* stock price (data14). All forecasts issued during the year are used in computing the average optimism.

Tests using forecast optimism, horizon, and precision are based on a sub-sample of firms that issued a forecast. If a firm issued multiple forecasts during a fiscal year, *MGOPTIMISM*, *HORIZON*, and *PRECISION* represent averages across these forecasts. Because *MGOPTIMISM* variable is only constructed for closed range and point forecasts, when this variable is included in the model, we omit *PRECISION* variable. *ANOPTIMISM* also represent firm-year averages based on all available analyst forecasts in *IBES*.

The control variables used in our audit fee models are derived from prior studies such as Simunic (1980), Craswell et al. (1995), Ashbaugh et al. (2003), Whisenant et al. (2003), and Larker and Richardson (2004), to name just a few. These studies find audit fees to be associated with client size, complexity of client's operations, liquidity and solvency of the client and industry characteristics. Using these variables, we specify the audit fee model as follows:⁷

$$\begin{aligned}
 LAUDIT = & \alpha_0 + \alpha_1 \text{Forecast variables} + \alpha_2 LASSET + \alpha_3 BIG4 + \alpha_4 ROA + \alpha_5 BTM + \alpha_6 INVREC \\
 & + \alpha_7 LEV + \alpha_8 LOSS + \alpha_9 SQSEG + \alpha_{10} SPECIAL + \alpha_{11} STDRET + \alpha_{12} QUALIFIED \\
 & + \text{year dummies} + \text{industry dummies} + \phi
 \end{aligned}
 \tag{4}$$

where, the variables are defined as follows (with *Compustat* data item numbers in parentheses):

LAUDIT = the log of audit fees for the current year;

LASSET = log of total assets of the company (DATA6);

BIG4 = is an indicator variable that equals 1 if the auditor is one of the current big 4 auditor and 0 otherwise;

ROA = Net Income (data172), deflated by prior total assets;

BTM = is the ratio of the book value of equity (DATA60) to the market value of equity (DATA199*DATA25), both measured at the end of the fiscal year;

⁷ Firm and year subscripts are suppressed for brevity.

- INVREC* = is the sum of inventory (DATA3) and accounts receivable (DATA2) divided by total assets;
- LEV* = total liabilities (DATA181) divided by total assets;
- LOSS* = an indicator variable that equals 1 if the company reported negative income before extraordinary items (DATA18) in the current year, and 0 otherwise;
- SQSEG* = is the square root of the number of business segments reported by the company;
- SPECIAL* = an indicator variable that equals 1 if the company reported non-zero special items (DATA17) and 0 otherwise;
- STDRET* = the standard deviation of the firm's monthly stock returns estimated over six years with at least 60 valid observations available;
- QUALIFIED* = an indicator variable that equals 1, if the company received a qualified opinion from its auditor; 0 otherwise.

A complete listing of all variable definitions appears in Table 1. To control for potential year and industry effects, we also include year dummies and separate industry dummies for Fama-French 48 unique industry groups. Based on prior research on audit fees, we expect positive coefficients on firm size (*LASSET*), client complexity and risk (*SQSEG*, *SPECIAL* and *STDRET*), financial distress (*LEV*, *LOSS*, and *QUALIFIED*), financial statement components (*INVREC*), and growth opportunities (*BTM*).

As discussed earlier, we run two regressions based on equation (4). Tests of forecasting propensity uses *FC* and *NFORECAST* as two alternatives for the “forecast variables” in equation (4) and is based on the all observations (forecasting and non-forecasting firms). Tests of forecast properties uses only the sub-sample of firms that issued a forecast and uses *NFORECAST*, *MGOPTIMISM*, *PRECISION*, *HORIZON* and *ANOPTIMISM* for “forecast variables” in equation (4).

[Insert Table 1 About Here]

3.2 Heckman two-stage selection model

Forecasting firms represent a unique population of firms from *Compustat*. Several studies show that a firm's decision to forecast its earnings is driven by multiple factors, such as its governance characteristics, institutional investor ownership, size, access to capital markets, earnings volatility, etc.⁸ As such, these variables represent potential endogenous factors which influence both management earnings forecasting policy and audit fees. To control for this potential endogeneity, we employ Heckman-type selection model based on Ajinkya et al. (2005) model of management earnings forecast issuance. In the first stage, we estimate the firm's likelihood of being a forecasting firm. Specifically, we estimate the following equation:

$$\begin{aligned} \text{Probability}(FC_{t+1}=1) = & a_0 + a_1 * LMVAL + a_2 * ROA + a_3 * LOSS + a_4 * LITIGATE + a_5 * LANALYST + \\ & a_6 * INST + a_7 * STDRET + a_8 * BTM + a_9 * OUTDIR + \\ & a_{10} * EVENT + e_t \end{aligned} \quad (5)$$

FC, *ROA*, *LOSS*, *BTM*, and *STDRET* were defined earlier. The other variables are defined as follows:

- LMVAL* = log of 1 plus the market value of equity of a firm;
- LITIGATE* = 1 if a firm is in "litigation industry" per Francis et al. (1994);
- LANALYST* = log of number of analyst following for a firm during the year. Analyst following data is from the *IBES* database;
- INST* = percentage of institutional ownership of a firm, obtained from Thomson Financial's *CDA Spectrum* database;
- OUTDIR* = percentage of independent directors on a firm's board, obtained from the *Compact Disclosure* database;
- EVENT* = 1 if a firm experiences a corporate event, such as a stock or debt offering, merger and acquisition, or bankruptcy/restructuring, per SDC database.

⁸ See, for example, Skinner (1994), Frankel et al. (1995), Baginski et al. (2002), and Ajinkya et al. (2005)

The second-stage regression is our audit fee model (Equation 4).

4. SAMPLE SELECTION

Table 2 summarizes our sample selection procedures. Because we require *Audit Analytics* and *First Call* coverage for our sample, our sample period begins in 1999 and ends in 2005. We include both quarterly and annual forecasts of EPS from *First Call* in our sample. We require that all firms included in the sample have *Compustat* quarterly and annual coverage, resulting in the initial sample of 47,455 observations. In addition to annual *Compustat* coverage, we require quarterly coverage due to the need to compute management forecast characteristics for both quarterly and annual management forecasts included in our sample.⁹ Once the *Compustat* sample is merged with *Audit Analytics* we get 30,710 observations. We exclude observations with negative book values, and we also require at least 5 years of *CRSP* monthly returns in order to compute standard deviation of stock returns, further reducing our sample size to 22,505. Out of these 8,533 firm-year observations are forecasting firms and the rest are non-forecasting firms. This sample is used as the basis of our comparisons of audit fees of forecasting and non-forecasting firms. Hereafter, we refer to this sample as our “Main Sample”.

[Insert Table 2 About Here]

For the Heckman two-stage tests, we require Institutional ownership data from Thomson Financial’s *CDA Spectrum* database, analyst following data from *IBES*, and directorship data from *Compact disclosure*. These data requirements reduce our sample to 13,460 observations. Hereafter, we refer to this sample as our “Heckman Sample”.

⁹ Requiring only annual Compustat coverage would have resulted in about 56,668 observations.

Finally, for our tests of forecast properties we confine ourselves to the forecasting sample only. We initially started with the 8,533 observations with management forecasts. A requirement of availability of *HORIZON* and *PRECISION* variables reduces our sample to 7,691 forecasts. *IBES* data availability requirement for *ANOPTIMISM* variable reduces our sample to 6,902 forecasts, and data availability requirement for *MGOPTIMISM* variable results in the sample of 6,362 forecasts. To ensure robustness of our results to data-availability restrictions in this sample, we run several specifications which include only sub-sets of these variables. We further refer to this sample as the “Forecast Properties Sample”.

5. RESULTS

5.1 Descriptive Statistics

Table 3 summarizes the descriptive statistics of our main sample. The mean and median values of *LAUDIT* are both 5.66, corresponding to the annual audit fees of about \$285,000. The mean (median) number of forecasts issued is 1.63 (0), suggesting that earnings forecasts are not wide-spread across firms. Mean (median) value of *BIG4* is 0.75 (1), indicating that most firms covered by *Audit Analytics* are audited by the “Big” accounting firms. Mean (median) number of segments is 1.72 (1.73). Mean (median) *LASSET* are 5.82 (5.79) which is consistent with the mean (median) asset size of the general *Compustat* population (un-tabulated). Average leverage for our sample is 0.59 which is also consistent with the overall *Compustat* population and the mean value for *LOSS* is 0.33 suggesting that a substantial portion of our sample is experiencing losses, consistent with findings in prior literature (e.g. Klein and Marquardt (2006)). Our sample has a mean of (median) log of analyst following of 2.49, corresponding to the average following of about 12 analysts. Average institutional ownership in our sample is 39 percent and about 67 percent of the board consists of non-officers.

[Insert Table 3 About Here]

For forecasting firms in our sample, mean forecast *HORIZON* is 142 days, suggesting that our sample is dominated by annual forecasts. Mean (median) value for *MGOPTIMISM* is 0.01 (0.00), confirming prior results, indicating that forecasts are on average optimistic (Rogers and Stocken (2005)). Finally, mean (median) forecast precision in our sample of 0.76 (1) suggests that the majority of forecasts in our sample are either point or closed range forecasts. This result is also consistent with the characteristics of the overall population of forecasting firms (Brown et al. (2005)).

5.2 Multivariate Analyses

Table 4 describes the empirical results of tests of hypotheses 1 and 2 in our Main sample. Column 2 provides the results based on *FC* which is the indicator variable representing forecasting versus non-forecasting firms. Column 3 shows the results using *NFORECAST* which is the total number of management earnings forecasts issued in four years. Our results support predictions of hypotheses 1 and 2 as both measures are positive and statistically significant at the 0.01 level. Signs and magnitudes of our control variables are in line with those documented in the prior research on audit fees.

[Insert Table 4 About Here]

Table 5 documents Heckman-two stage estimation results of our Heckman sample. In the first stage, we estimate the probability that a firm selected is a forecasting firm ($FC=1$). In the second-stage, we estimate whether a number of earnings forecasts issued during the current year is associated with an additional forecasting audit fee premium. Prior studies in the management

earnings forecasting determinants literature serve as a basis of our first stage selection model (Ajinkya et al. (2005)). The second-stage regression is a traditional audit fee model, as is in Panel A of Table 4. Our results indicate that greater levels of forecasting among forecasting firms result in some audit fees premium (coefficient on *NFORECAST* is positive and significant 0.01 at 0.01 level). Hence, our results strongly support predictions of Hypotheses 1-2.

[Insert Table 5 About Here]

In Table 6, we report the test results of our hypotheses 3, 4, 5, and 6, using Forecast Properties sample. We run four different specifications. Our un-tabulated results show that results of Tables 4 still hold in this sub-sample. For Specification 1, consistent with our results in Table 4, we show that an increase in number of issued forecasts is associated with higher audit fees. Forecast horizon is not significantly associated with audit fees. However, more *optimistic* management earnings forecasts are associated with *higher* audit fees (coefficient on *MGOPTIMISM* of 1.09 significant at 0.01 level), suggesting that auditors perceive forecast optimism as an additional source of litigation risk. Specification 2 differs from Specification 1 in that it omits *MGOPTIMISM* variable because it is only constructed for point and closed-range management forecasts. Specification 2 shows that the coefficient on *PRECISION* variable is not significant. However, the coefficient on *HORIZON* variable is significant at 0.05 level.

[Insert Table 6 About Here]

Specifications 3 and 4 add *ANOPTIMISM* variable to the analysis. In both specifications, the coefficient on *ANOPTIMISM* variable is positive and significant 2.68, suggesting that more optimistic analyst forecast errors result in higher audit fees. Specification 4 shows that the

coefficient on *MGOPTIMISM* is still significant at 0.05 level, albeit smaller in magnitude, 0.67, than the coefficient on the same variable in Specification 1. This result suggests that auditors not only care about managerial optimism, but also of analyst optimism in pricing their audits. It further underscores the idea that both analyst forecast optimism and management forecasts' optimism contribute to the over-valuation of a firm (Jensen (2002)), and over-valued firms are more likely to commit fraud (Jones (2008)). In addition, in this specification, *HORIZON* is marginally significant, suggesting that there is a small increase in audit fees when firms tend to issue longer term forecasts. Hence, our empirical results support predictions of hypotheses 1-3, Hypotheses 4 is marginally supported, and Hypothesis 5 is not supported.

5.3 Robustness checks:

We conducted a number of additional tests to examine whether our results are sensitive to alternative specifications. First, in tests of forecast occurrence and forecast frequency we had retained only one of multiple forecasts made on the same day. We found that our results are not sensitive to this choice. We also looked at the frequency of forecasts made over a four-year window in case the auditors examine a longer disclosure history to determine the fees and found that our results under this specification is also consistent with those reported using *NFORECAST* in Table 4.

Next we investigated whether our results are affected by the passage of Sarbanes-Oxley Act in 2003. Audit fees have increased substantially since Sarbanes-Oxley and the relationship between management's earnings guidance and audit fees could have changed with the passage of the act. In order to examine this we broke our sample into two sub-periods, (before and after 2003) and our (un-tabulated) results for the two groups were qualitatively similar indicating no systematic shift in the hypothesized relationships.

It is not clear whether audit fees are substantively set towards the beginning of the audit engagement or they can adjust as things arise during the audit year. If the fees are indeed determined early on in the fiscal year, then it is unlikely to be affected by the optimism of management forecasts or analyst forecasts of the current year. Consequently we looked at an alternative specification where period $t-1$ values for forecast properties. The unreported results were similar to those reported in Table 6.

Finally we also added a number of additional control variables to our fee model, such as a dummy for mergers and acquisitions, a measure of earnings volatility, and earnings quality (discretionary accruals and accrual quality measures), and these did not substantively change our results.

6. CONCLUSIONS

We study the association between audit fees and the properties of management earnings forecasts. Consistent with our expectations developed from extant research, auditing practitioners' literature, the arguments used by SEC in some high-profile accounting fraud cases, our findings indicate that auditors view management earnings forecasts as a risk-increasing factor, resulting in higher audit fees. We thus provide important evidence on a potential cost of voluntary disclosures that has not received much attention in the literature. Our findings also suggest that management's disclosure choices affect audit fees and therefore suggest that audit fee models should include this as an additional factor. In addition, we provide an important link between voluntary disclosure and audit fees literature, by showing that the economics of audits is affected by voluntary disclosure decisions. This finding is important because, at least on the surface, auditors are not directly responsible for ex-post accuracy of voluntary disclosures and the impact of these disclosures, if erroneous, on firms' shareholders.

Future research could expand our analysis to the overall question of costs and benefits of voluntary disclosures. In particular, it would be interesting to know whether disclosing firms take the audit costs into account when making their disclosure choices, and if they do, what are the offsetting benefits of voluntary disclosure that dominate such choices.

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TABLE 1
Variables Definitions

FC	An indicator variables that equals 1, if a firm issues at least one EPS forecast during the year, 0 otherwise. Data from First Call CIG file.
NFORECAST	Number of EPS forecasts issued by a company in the current fiscal year (non-forecasting firms are coded 0). Data from First Call CIG file
MGOPTIMISM	Average of ex-post management earnings forecasts' optimism during the year for a particular firm. An individual management earnings forecast optimism is defined as the difference between COMPUSTAT's EPS and the value of First Call CIG's forecasted earnings, deflated by the beginning of the year price. Only point and closed range forecasts are included in this variable. For closed range forecasts, a mid-point of the range is taken as the forecast estimate.
HORIZON	An average of forecast horizons of all management earnings forecasts issued by a firm during the year. Forecast horizon is defined as the number of days from management earnings forecast date to the end of the fiscal period for which the forecast is made.
PRECISION	The number of point or closed range forecasts issued during the year divided by the total number of forecasts issued during the year.
ANOPTIMISM	The average analyst forecast optimism calculated over the fiscal year where forecast optimism is defined as the difference between IBES actual earnings and IBES analyst forecast, deflated by the beginning of the quarter Compustat stock price (data14). All forecasts issued during the year are used in computing the average optimism.
LAUDIT	Log of audit fees for the current year as reported in <i>Audit Analytics</i>
LASSET	Log of total assets of the company (data6).
BIG4	Indicator variable that equals 1, if a firm is audited by one of the "Big 4" auditors (data149); 0 otherwise.
ROA	Net income (data172), deflated by the average total assets.
BTM	The ratio of book value of equity (DATA60), to market value of equity (Data25*data199) both measured at the end of the fiscal year.
INVREC	Total firm inventory (DATA3) and accounts receivable (DATA2) deflated by the average total assets.
LEV	Total liabilities (data181)/total assets.
LOSS	An indicator variable that equals 1, if income before extraordinary items (DATA18) is negative; 0 otherwise.
SQSEG	Square root of the number of business segments reported by the company in the <i>Compustat</i> segment file.
SPECIAL	Compustat special items (data273) deflated by average total assets.
STDRET	Standard deviation of firms' stock returns, estimated using monthly returns over six years with at least 60 valid observations available.
ISSUE	A dummy variable equal 1 if Compustat stock issuances variable (data108) is not missing, and 0 otherwise.
QUALIFIED	An indicator variable that equals 1, if the company received a qualified opinion from the auditor; 0 otherwise.
LMVAL	Log (market value of common equity +1).
LITIGATE	An indicator variable equal 1 if a firm is in one of the "litigious" industries as identified in Francis et al. (1994).
LANALYST	Log (Total number of individual analysts who issued forecasts for a firm during the year per IBES+1).
OUTDIR	Percentage of independent directors on firms' board per <i>Compact Disclosure</i> .
INST	Percentage of shares owned by institutional investors per <i>CDA Spectrum</i> database.
EVENT	Indicator variable that equals 1 if a firm had a new stock or debt offering, experienced a merger, acquisition or restructuring; 0 otherwise. Data obtained from the SDC database.

TABLE 2
Sample Selection

	Number of Observations
Forecasting sub-sample: Number of firm years with Compustat quarterly and annual coverage with at least 1 EPS management forecast between 1999 and 2005	12,101
Non-forecasting sub-sample: Number of firm years with Compustat quarterly and annual coverage with no EPS management forecasts between 1999 and 2005	35,354
Subtotal	<u>47,455</u>
After merge with Audit Analytics data:	
Forecasting sub-sample: Number of firm years with Compustat quarterly and annual coverage with at least 1 EPS management forecast between 1999 and 2005	9,557
Non-forecasting sub-sample Number of firm years with Compustat quarterly and annual coverage with no EPS management forecasts between 1999 and 2005	21,153
Subtotal	<u>30,710</u>
After exclusion of firm year observations with negative book values	27,289
After requiring at least 60 monthly CRSP return observations over 6 years moving window to compute standard deviation of firm stock returns	<u>22,505</u>
Forecasting firm-years	8,533
Non-forecasting firm-years	13,792
 Additional Control Variables	
Requiring Institutional Ownership data from Thomson/CDA Spectrum	19,800
Requiring Analyst Following data from IBES	14,324
Outside Directorship data from Compact Disclosure	<u>13,460</u>

TABLE 3
Sample Characteristics

Variable	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
LAUDIT	22,505	5.66	1.28	4.74	5.49	6.45
NFORECAST	22,505	1.63	3.00	0.00	0.00	2.00
HORIZON	7,730	142.35	93.16	67.22	135.33	194.00
MGOPTIMISM	7,856	0.01	0.04	0.00	0.00	0.01
PRECISION	8,533	0.76	0.37	0.67	1.00	1.00
ANOPTIMISM	14,621	0.01	0.03	0.00	0.00	0.01
BIG 4	22,505	0.75	0.43	0.00	1.00	1.00
NSEGM	22,505	1.72	1.20	1.00	1.73	2.45
LASSET	22,505	5.81	2.11	4.31	5.78	7.19
INVREC	22,505	0.32	0.25	0.10	0.26	0.49
LEV	22,505	0.59	0.48	0.31	0.55	0.81
LOSS	22,505	0.33	0.47	0.00	0.00	1.00
QUALIFIED	22,505	0.32	0.47	0.00	0.00	1.00
ROA	22,505	-0.04	0.22	-0.04	0.01	0.06
BTM	22,505	0.76	0.78	0.33	0.55	0.89
SPECIAL	22,505	-0.02	0.06	-0.01	0.00	0.00
STDRET	22,505	0.18	0.11	0.10	0.15	0.23
EVENT	22,505	0.41	0.49	0.00	0.00	1.00
ISSUE	22,505	0.74	0.44	0.00	1.00	1.00
LMVAL	22,451	5.41	2.08	3.87	5.33	6.81
LITIGATE	22,505	0.28	0.45	0.00	0.00	1.00
LANALYST	14,242	2.49	1.07	1.61	2.48	3.33
INST	19,329	0.39	0.28	0.13	0.36	0.63
OUTDIR	18,627	66.64	20.58	57.14	71.43	80.00

The Table summarizes descriptive statistics for all variables used in this study. The sample is composed of all firm-year observations with sufficiently available data from Compustat/Audit Analytics/IBES/CRSP/Thomson Financial/Compact Disclosure between 1999 and 2005. All variables are defined in Table 1.

TABLE 4
Effect of Management Earnings Forecasts Frequency on Audit Fees

Parameter	Estimate	t Value	Estimate	t Value
INTERCEPT	1.54	6.06***	1.55	6.1***
FC	0.09	6.12***		
NFORECAST			0.02	7.85***
LASSET	0.51	91.75***	0.51	91.39***
BIG4	0.26	11.05***	0.26	11.22***
ROA	0.40	-9.42***	0.40	-9.37***
BTM	0.01	-1.02	0.01	-0.94
INVREC	0.41	8.53***	0.41	8.68***
LEV	0.01	-0.41	0.01	-0.4
LOSS	0.10	6.35***	0.11	6.72***
SQSEG	0.03	4.21***	0.03	4.12***
SPECIAL	0.08	-0.79	0.07	-0.77
STDRET	0.85	9.59***	0.86	9.76***
QUALIFIED	0.17	12.9***	0.17	12.71***
Year dummies		Yes		Yes
Industry dummies		Yes		Yes
R ²		0.76		0.76
# of observations		22,505		22,505

This Table reports the results of the following OLS regressions:

$$LAUDIT = b_0 + b_1 * FORECAST\ VARIABLE + b_2 * LASSET + b_3 * BIG4 + b_4 * ROA + b_5 * BTM + b_6 * INVREC + b_7 * LEV + b_8 * LOSS + b_9 * SQSEG + b_{10} * SPECIAL + b_{11} * STDRET + b_{12} * ISSUE + b_{13} * QUALIFIED + e_t$$

Where *FORECASTVARIABLE* is either *FC* (which equals 1 if the company issued a forecast in the current year; 0 otherwise), *NFORECAST* (number of forecasts issued during a year), or *NFORECAST4* (number of forecasts issued during four years ending in the current year). All variables are defined in Table 1. The model includes dummies for 48 Fama-French industry groups and year dummies that are not reported, and all standard errors are cluster-adjusted per Petersen (2007).

*, **, *** denote two-tail significance levels of 0.1, 0.05, and 0.01, respectively.

TABLE 5
Effect of the Issuance of Management Earnings Forecasts on Audit Fees Using the Heckman Sample Selection Model

Parameter	Estimate	t-statistic
<i>1st stage; Dependent Variable Probability (one period ahead earnings forecast)</i>		
INTERCEPT	-1.68	-23.56***
ROA	0.97	10.97***
LLOSS	-0.33	-10.01***
LITIGATE	0.31	10.86***
LANALYST	0.19	11.96***
INST	1.07	20.17***
LMVAL	0.03	2.93**
STDRET	1.77	11.1***
BTM	0.03	1.32
OUTDIR	0.00	2.27**
EVENT	0.25	10.71***
<i>2nd stage; Dependent Variable LAUDIT</i>		
INTERCEPT	2.42	13.67***
NFORECAST	0.01	3.64***
BIG4	0.23	6.63***
SQSEGM	0.01	1.91*
LASSET	0.57	83.29***
INVREC	0.50	9.34***
LEV	0.12	4.39***
LOSS	0.16	6.6***
QUALIFIED	0.10	5.99***
ROA	-0.10	-1.05
BTM	-0.04	-2.57**
SPECIAL	-0.67	-3.66***
STDRET	0.59	4.86***
Year dummies		Yes
Industry dummies		Yes
# of observations		13,460
AIC		28,715

This Table reports the results of two-stage Heckman sample selection regression analysis with the following specification:

$$1^{st} \text{ stage: } Probability(FC_{t+1}=1) = a_0 + a_1 * LMVAL + a_2 * ROA + a_3 * LOSS + a_4 * LITIGATE + a_5 * LANALIST + a_6 * INST + a_7 * STDRET + a_8 * BTM + a_9 * OUTDIR + a_{10} * EVENT + e_t$$

$$2^{nd} \text{ stage: } LAUDIT = b_0 + b_1 * NFORECAST + b_2 * LASSET + b_3 * BIG4 + b_4 * ROA + b_5 * BTM + b_6 * INVREC + b_7 * LEV + b_8 * LOSS + b_9 * SQSEG + b_{10} * SPECIAL + b_{11} * STDRET + b_{12} * ISSUE + b_{13} * QUALIFIED + e_t$$

All variables are defined in Table 1. The model includes dummies for 48 Fama-French industry groups and year dummies that are not reported, and all standard errors are cluster-adjusted per Petersen (2007).

*, **, *** denote two-tail significance levels of 0.1, 0.05, and 0.01, respectively.

TABLE 6
Audit Fees and Earnings Forecasts' Properties

Parameter	Specification 1		Specification 2		Specification 3		Specification 4	
	Estimate	t Value	Estimate	t Value	Estimate	t Value	Estimate	t Value
INTERCEPT	2.12	8.08	2.27	8.4***	2.37	8.52***	2.18	8.1***
<i>HORIZON</i>	0.00	1.27	0.0002	2.28**	0.00	2.48**	0.00	1.89**
<i>NFORECAST</i>	0.01	3.73***	0.01	3.84***	0.01	3.59***	0.01	3.42***
<i>MGOPTIMISM</i>	1.09	4.79***					0.67	2.44**
<i>PRECISION</i>			0.03	-1.32	-0.03	-1.17		
<i>ANOPTIMISM</i>					2.68	7.22***	2.68	6.44***
BIG4	0.24	3.94***	0.21	3.79***	0.23	3.75***	0.28	4.37***
SQSEGM	0.02	1.87*	0.02	1.84*	0.02	1.57	0.02	1.73*
LASSET	0.57	63.92***	0.56	66.58***	0.58	64.34***	0.58	61.98***
INVREC	0.43	5.65***	0.48	6.38***	0.50	6.29***	0.47	5.77***
LEV	0.04	1.43	0.04	1.39	0.04	1.36	0.04	1.37
LOSS	0.14	5.13***	0.17	6.54***	0.12	4.08***	0.11	3.62***
QUALIFIED	0.11	5.74***	0.12	6.26***	0.11	5.48***	0.10	5.08***
ROA	0.10	-0.80	0.14	-1.39	-0.03	-0.29	0.01	0.07
BTM	0.05	-2.03**	0.04	-2**	-0.08	-3.2***	-0.07	-2.86**
SPECIAL	0.10	-0.41	0.32	-1.67*	-0.56	-2.65***	-0.37	-1.49
STDRET	0.84	4.64***	0.71	4.23***	0.78	4.28***	0.87	4.47***
Year dummies		Yes		Yes		Yes		Yes
Industry dummies		Yes		Yes		Yes		Yes
R2		0.75		0.75		0.75		0.75
# of observations		6,999		7,691		6,902		6,362

This Table reports the results of the regression of the log of audit fees (*LAUDIT*), on the various properties of management forecasts including forecast horizon (*HORIZON*), management forecast optimism (*MGOPTIMISM*), management forecast precision (*PRECISION*), and analyst forecast optimism (*ANOPTIMISM*). These variables, along with the control variables are defined in Table 1. The regression includes dummies for Fama-French industries and year dummies (not reported), and all standard errors are cluster-adjusted per Petersen (2007).

*, **, *** denote two-tail significance levels of 0.1, 0.05, and 0.01, respectively.