Insider Trading, Litigation Concerns, and Auditor Going-Concern Opinions

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ABSTRACT: We investigate whether insider selling affects the likelihood of firms receiving auditor going-concern opinions. Prior studies document significant negative market reactions to the issuance of going-concern opinions, indicating that such opinions convey bad news to investors. Insider sales followed by negative news are likely to attract regulators' scrutiny and investor class-action lawsuits. Therefore, we predict that, to reduce the risk of litigation, managers have incentives to avoid receiving going-concern opinions after their insider sales by pressuring auditors for clean audit opinions. We evaluate this prediction empirically and find that the probability of receiving a going-concern opinion is negatively associated with the level of insider selling. Further analysis indicates that this negative relation is more pronounced for firms that are economically significant to their auditors but less pronounced when (1) auditors have concerns about litigation exposure and reputation loss and (2) audit committees are more independent. Finally, the negative relation between going-concern opinions and insider sales is significantly weakened after SOX.

Keywords: *insider trading; litigation risk; going-concern opinion; SOX.*

JEL Classifications: *G18; M42; G48.*

I. INTRODUCTION

We investigate whether managers' litigation concerns about insider selling affect the likelihood of firms receiving going-concern opinions. Prior studies show that managers face the risk of trade-related litigation around news events (Seyhun 1992; Givoly and

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Palmon 1985). To reduce their risk exposure, managers have at least two options. First, they can abstain from trading before notable events. Seyhun (1992), for example, finds that insiders reduce their "timely" trades before major events, such as earnings and takeover announcements (i.e., sales before negative news and purchases before positive news). Alternatively, when managers do choose to trade, they can attempt to alter the information flow in the post-trading period to avoid price swings and escape regulators' scrutiny.[1] We focus on this option with respect to the association between managers' insider sales and auditors' going-concern modifications.

Prior studies (e.g., Firth 1978; Chow and Rice 1982; Fleak and Wilson 1994; Jones 1996; Carlson et al. 1998; Menon and Williams 2010) provide evidence of negative market reaction to first-time going-concern reports.[2] Researchers have also documented that managers can influence auditors' opinions and engage in opinion shopping (Carcello and Neal 2000; Lennox 2000). Given that auditors tend to make Type I errors—studies show that a low percentage of firms receiving going-concern reports declare bankruptcy in the year following the audit opinions (e.g., Myers et al. 2011)—opinion shopping seems particularly plausible when the nature of the opinion is ambiguous. If managers have incentives to avoid insider-selling related litigation, then we expect that they will exert a greater influence on auditors to avoid receiving a going-concern report. In other words, we predict an inverse relation between the likelihood of receiving a first-time going-concern opinion and insider selling. Anecdotal evidence seems to support our prediction. For example, when companies file registration statements so that insiders can sell stock, they often cite clean audit reports as supporting documents.[3]

At least two reasons motivate our focus on insider selling. First, the information content of the two types of auditor opinion is asymmetric. First-time going-concern opinions induce significantly negative market reactions, while clean opinions do not generate positive market reactions (Firth 1978; Jones 1996; Menon and Williams 2010). Insiders are therefore less concerned about buying and the subsequent receipt of a clean opinion. Second, Roulstone (2008) argues that bad-news disclosures are more likely to trigger investor lawsuits that allege inadequate disclosure by management. Such lawsuits usually use pre-disclosure insider selling to indicate management's foreknowledge of bad news. Thus, in contrast to insider purchases ahead of good news, insider sales ahead of bad news carry a significant legal risk.[4]

Using a sample of 12,329 firm-year observations based on a two-step regression technique, we find evidence that a higher level of insider selling is associated with a lower likelihood of receiving a first-time going-concern report. For a one standard deviation increase in insider selling, the probability of receiving going-concern reports decreases by 1.39 percent. We perform four

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[1] Regulators frequently detect insider trading by examining the price movement of a company's stock and identifying suspicious events, and shareholders are likely to file class action lawsuits following a drastic decline in stock price.

[2] Anecdotal evidence is consistent with these findings. For example: "Drkoop.com filed its Annual Report . . . that its auditors doubted the Company's ability to continue as 'going concern.' Following these revelations, the company's stock plummeted from a previous close of $6.25 to a close of $3 on March 31, 2000—a one day drop of approximately 41 percent" (*Business Wire* 2000).

[3] When Quepasa.com filed a new registration statement in September 2000 to enable some insiders to sell stock, KPMG, the *fourth* auditor within a year, allowed the company to cite its clean audit opinion from early 2000. Quepasa.com was closed by the end of 2000 (Weil 2001; see Quepasa.com's filing of form S-3 on Sept. 15, 2000). In fact, it is fairly common that insiders incorporate auditors' reports into their filings with the SEC to disclose their intent to sell. For example, we find such cases for Argon St. Inc in 2005 and Vector Group Ltd in 2004.

[4] A law firm (Wolf Haldenstein Adler Freeman & Herz LLP) filed a class action lawsuit against Drkoop.com Inc., alleging that the company and certain insiders had provided materially false and misleading information before the firm received a going-concern opinion. Some of the supporting evidence was that insiders liquidated their stock positions in the company immediately preceding the issuance of a going-concern opinion (*Business Wire* 2000).

cross-sectional analyses. The results indicate that the negative relation between insider selling and the probability of receiving a going-concern opinion is stronger for firms that are more economically important to their auditors but weaker for firms whose auditors have greater concerns about litigation exposure and reputation loss and for firms with more independent audit committees. Next, to address the direction of causality, we examine auditor switches following the issuance of clean opinions. Specifically, we attempt to determine whether managers exert influence over auditors' opinions to reduce their risk of selling-induced litigation or insiders to reduce their selling in anticipation of a going-concern opinion. We find that auditors who issue clean opinions for clients with higher levels of insider selling have a lower frequency of dismissals in the subsequent year. These results are consistent with the notion that management influences auditors' opinions but are inconsistent with the notion that insiders reduce their selling in anticipation of going-concern reports.

We also find that the negative relation between insider selling and the likelihood of receiving a going-concern opinion holds for the pre- and post-SOX periods but is significantly weaker in the post-SOX period. We attribute this finding to the overall strengthening of corporate governance, which enhances the independence of both the internal audit committee and the external auditors (Chambers and Payne 2008). To alleviate the concern that firms receiving going-concern opinions are fundamentally different from those receiving clean opinions, we re-run our main analysis based on an alternative matched sample and the marginal effect of insider trading on going-concern reports are even stronger. In additional analyses, we find more pronounced results for insider trades occurring in the later part of the year and for relatively healthier firms. The latter finding supports the notion that, when pressured by a client, an auditor might be lenient if the situation giving rise to a potential going-concern report is ambiguous. Finally, our main findings are robust to an estimation based on a simultaneous equation system, to an estimation controlling for earnings management and the management's plans, and to the use of alternative measures of insider trading.

Two caveats are in order before proceeding. First, we offer no direct evidence that managers pressure their auditors when engaged in insider sales. Although the results suggest indirectly the existence of such pressure, our findings are also consistent with an alternative explanation. That is, when observing insider sales prior to issuing an opinion, auditors may decide to be less conservative in their opinion by rationally trading off the expected cost of litigation associated with insider sales preceding a going-concern opinion with that of a clean opinion for a firm going bankrupt. Alternatively, corporate insiders may simply trade for liquidity reasons that lead to a higher level of insider selling for firms with clean opinions than for going-concern firms. At the same time, these clean firms have better fundamentals and, thus, we observe a lower likelihood of receiving a going-concern opinion. Second, our two-step regression technique, which intends to address reverse-causality concerns, has the downside that the economic factors used to predict net insider sales are largely legitimate and observable drivers of insider selling rather than reflecting insiders' opportunistic behavior. We attempt to mitigate this concern and gauge insiders' opportunistic trading behavior by using changes in lieu of levels to calculate net insider sales. The limitation, however, cannot be completely eliminated due to the nature of the two-step regression technique.

Our study offers two primary contributions. First, it provides insight into the incentive effect of corporate insider trading on auditor behavior. Prior studies examine auditor behavior from the perspective of the corporate governance of auditees (Carcello and Neal 2000) and auditors' economic incentives (DeFond et al. 2002). However, there is little evidence on the effect of managers' incentives on auditor behavior. Our study helps to fill this gap by providing evidence on the relationship between managers' incentives and auditors' opinions.

Second, this study adds to the literature on insider trading. Prior studies show that insiders' incentives to maximize trading profits affect earnings management (Beneish and Vargus 2002;

Beneish et al. 2011) and voluntary disclosure (Cheng and Lo 2006).[5] Rogers (2008) documents that managers make higher quality disclosures before they sell shares to reduce litigation risk. A closely related study by Stanley et al. (2009) examines insider trading surrounding first-time going-concern opinions and finds that insider sales immediately before and after going-concern opinions predict bankruptcy. Our evidence extends this literature by showing that insiders' incentives to sell and their desire to avoid litigation can influence auditors' reports.

Section II develops our hypotheses. Section III describes our sample and research method. Section IV reports the results. Section V presents additional analyses, sensitivity tests, and further discussion. Section VI concludes.

II. HYPOTHESIS DEVELOPMENT

Managers can capitalize on their private information through insider trading. Prior research suggests that managers time stock trades by buying before price increases and selling before price declines.[6] However, insider trading regulations impose penalties for illegal insider trades. For example, the Insider Trading and Securities Fraud Enforcement Act of 1988 increased the penalties for illegal insider trading by 300 percent and increased criminal penalties by 1,000 percent (Jagolinzer and Roulstone 2009). Seyhun (1992) and Garfinkel (1997) examine the association between regulatory enforcement and insider trading volumes before earnings releases and find evidence of decreased "timely" trades in anticipation of earnings news. Insiders can avoid regulatory sanction by abstaining from trading. But insiders can also coordinate timely trades and the release of news during the post-trading period to achieve the same goal. In other words, by altering the post-trade information flow, insiders can attempt to avoid signals that regulators or investors use to detect insider trading.

DeFond et al. (2002) note that auditors' opinions play an important role in warning market participants of impending going-concern problems. Prior studies show that stock prices respond negatively to the issuance of first-time going-concern reports (Firth 1978; Fleak and Wilson 1994; Jones 1996; Menon and Williams 2010). Fleak and Wilson (1994) argue that auditors' going-concern opinions can affect stock prices for at least two reasons. First, a going-concern qualification provides a warning about the auditor's assessment of a company's probable viability. Second, a going-concern opinion can have direct negative consequences for a firm's future cash flow, resulting in technical default on existing debts or a defective SEC registration statement. Consistent with this argument, Menon and Williams (2010) find -3.49 percent one-day $(+1)$ and -6.28 percent three-day $(0, +2)$ size-adjusted stock returns following the release of going-concern reports. Compared with the criteria of -20 percent quarterly abnormal returns for large price drops used in Beck and Bhagat (1997), who study shareholder litigation, a three-day abnormal return of -6.28 percent is nontrivial. Several other studies show similar results. Firth (1978) finds that announcements of going-concern opinions induce an average abnormal return of -4.1 percent for 35 firms from the U.K. Jones (1996) documents an average abnormal return of -2.79 percent over $(-2, +2)$ days around going-concern opinion announcements for 68 U.S. firms.

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[5] Another extensive literature argues that insider trading increases litigation risk and that insiders attempt to avoid trading around significant information events, including takeover announcements (Seyhun 1992), bankruptcies (Seyhun and Bradley 1997), management forecasts of earnings (Penman 1985; Noe 1999), earnings announcements (Park et al. 1995; Garfinkel 1997), and breaks in positive earnings strings (Huddart et al. 2003).

[6] These studies include Jaffe (1974), Finnerty (1976), Baesel and Stein (1979), Givoly and Palmon (1985), Seyhun (1986), Rozeff and Zaman (1988), Seyhun (1998), Beneish and Vargus (2002), and Huddart et al. (2003), among others.

Carcello and Neal (2000) and Lennox (2000) find that auditors are less likely to issue going-concern opinions when pressured by their client firms. Furthermore, given the low percentage of firms that file for bankruptcy after receiving a going-concern report (Stanley et al. 2009; Myers et al. 2011), auditors tend to err on the conservative side and make Type I errors. Thus, auditors likely have some discretion in issuing going-concern reports, particularly when the nature of the opinion is ambiguous. If managers have incentives to avoid insider-selling-related litigation, then we expect that they will pressure auditors for clean opinions. This line of argument leads to the first hypothesis, formally stated as follows:

H1: Insider selling activity is negatively associated with the likelihood of receiving a going-concern opinion.

Auditors trade off the benefits, such as client retention, and costs, such as litigation and reputational damage, when deciding whether to issue a going-concern report (DeAngelo 1981; Watts and Zimmerman 1981). As a consequence, the negative relation between insider selling and the likelihood of receiving a going-concern opinion is expected to be more pronounced when clients are economically important.

On the other hand, high litigation costs and reputation concerns are likely to motivate auditors to act conservatively (Antle et al. 1997). Shu (2000) finds that auditors resign from clients in response to increased litigation risk and emerging mismatches with the clients. Based on these arguments, we conjecture that the negative relation between insider selling and the probability of receiving a going-concern opinion is likely to be attenuated when auditors have greater concerns about litigation costs and reputational harm. In summary, the above arguments motivate the next three hypotheses.

H2: The inverse relation between insider selling and the probability of receiving a going-concern opinion is more pronounced for firms that are economically more important to their auditors.

H3: The inverse relation between insider selling activity and the probability of receiving a going-concern opinion is less pronounced for firms whose auditors have higher litigation costs.

H4: The inverse relation between insider selling activity and the probability of receiving a going-concern opinion is less pronounced for firms whose auditors have better reputations.

An important role of audit committees is to protect external auditors from dismissal following the issuance of an unfavorable report. Carcello and Neal (2000) find that audit firms are less likely to issue going-concern reports to financially distressed clients whose audit committees lack independence. Furthermore, Carcello and Neal (2003) find that audit committees with greater independence are more effective in shielding auditors from dismissal after the issuance of new going-concern reports. Taken together, their evidence suggests that auditors are less likely to be influenced by managers when the audit committee is more independent. SOX Section 301, which requires public companies to have a fully independent audit committee, reflects regulators' belief that an independent audit committee contributes to higher audit quality. Following this line of argument, our fifth hypothesis is formally stated as follows:

H5: The inverse relation between insider selling and the probability of receiving a going-concern opinion is less pronounced for firms whose audit committees are more independent.

III. SAMPLE SELECTION AND RESEARCH METHOD

Sample Selection

We obtain insider trading data from Thomson Reuters and examine two types of insider trading transactions in our analysis: open market purchases and open market sales.[7] To investigate the aggregate influence of management, we sum the purchases and sales by all top managers of the same firm over a fiscal year. Following prior studies (e.g., Cheng and Lo 2006; Huddart et al. 2007), we use the dollar amount of insider trades to capture the strength of trading incentives.

We obtain information about audit opinions and audit fees from Audit Analytics for the period 2000 through 2007. We then match the audit opinion data with the Compustat industrial annual file for the necessary financial statement variables, the Center for Research in Security Prices (CRSP) database for stock return variables, and the Insider Trading database for insider trading activity. This procedure leaves a total of 35,188 firm-year observations with the necessary variables. As in prior research, we restrict our sample to financially distressed firms because the decision to issue a going-concern opinion is most salient among these firms (Hopwood et al. 1994; Mutchler et al. 1997; Reynolds and Francis 2000; Carcello and Neal 2000; DeFond et al. 2002).[8] As in DeFond et al. (2002), we classify a firm as financially distressed when it reports either negative earnings or negative operating cash flow during the current fiscal year. Firm-years following first-time going-concern opinions are excluded because our focus is on auditors' decisions to issue first-time going-concern opinions. These restrictions exclude 21,489 firm years that are not financially distressed and 1,320 firm years following first-time going-concern opinions. Our final sample retains 12,329 firm years, consisting of 801 observations with first-time going-concern opinions and 11,528 observations with clean opinions.

Research Design

H1 predicts an inverse relation between the likelihood of receiving a going-concern opinion and insider selling activity. We measure insider trading by aggregating the trades of top managers over one year, ending with the current year's earnings announcement.[9] Because courts use so-called abnormal insider sales to establish scienter in securities lawsuits, we gauge the abnormal portion of insider sales (*CHNSV*) by the difference between the net selling volume (*NSV*) of the current year and the average *NSV* during the prior four years. The net selling volume (*NSV*) is the natural logarithm of 1 plus the absolute total dollar amount of net insider trading (i.e., insider purchases subtracted from insider sales, in thousands of dollars) over a fiscal year, with a positive (negative) sign added for net sales (net purchases).

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[7] We include insider trading transactions by top officers—that is, chairman, vice chairman, CEO, COO, president, and CFO—but exclude transactions by lower-tier officers and non-officer insiders who are unlikely to influence management's private incentives. Chairman, vice chairman, CEO, COO, and president are classified as Level I insiders in the insider trading database. Our results do not change when we use CEOs' insider trades only or when we use the aggregate insider trades by all corporate insiders.

[8] Financially distressed firms may have less bargaining power with auditors over an audit opinion. Consequently, the sample consisting of these firms may be less appropriate for examining our research question. However, given that Carcello and Neal (2000) demonstrate the effect of audit committee independence on the likelihood of auditors issuing going-concern opinions among financially distressed firms, we are less concerned about this issue.

[9] Auditors commonly determine an audit opinion in two to three months after a fiscal year-end, and their final opinion is usually filed after earnings announcements. We therefore treat the after-year-end trades that occur before earnings announcement as part of the current year's insider activities because these trades may still influence auditors. Untabulated analysis shows that our results are robust to the exclusion of this part of trades.

To test the effect of insider trading on the likelihood of receiving a going-concern opinion, we must control for trading activity that occurs in anticipation of an auditor's opinion (i.e., reverse causality). For example, the fact that a higher level of insider sales in a fiscal year is correlated with a lower likelihood of receiving a going-concern opinion may simply indicate either one or both of the following: (1) managers who want to sell discourage auditors from issuing going-concern opinions, as hypothesized in H1, or (2) when managers anticipate that an auditor is likely to issue a going-concern opinion, they are less likely to dispose of their holdings. We address this endogeneity issue by using instrumental variables (IVs) for our insider trading variable. Specifically, we employ a two-step regression technique following Cheng and Lo (2006). In the first step, we obtain the predicted change in insider sales (*PREDICT_CHNSV*) for the current fiscal year, using information from prior fiscal years such as option grants, firm size, growth opportunities, and stock returns. The model specifications, variable definitions, and results are presented in Appendix A. This procedure results in valid IVs for insider trading, as the predicted change in insider sales in year *t* is correlated with the actual change in net insider selling volume (*CHNSV*) in year *t*, and it is not endogenously affected by the type of audit opinion issued for year *t*. In the second step, we follow DeFond et al. (2002) and estimate the probability of receiving a going-concern opinion using the *predicted* change in insider selling (*PREDICT_CHNSV*) from the first-stage regression for financially distressed firms:

$$
\begin{aligned}
Pr(GC\ OPINION_t = 1) = \ &\beta_0 + \beta_1(PREDICT\_CHNSV_t) + \beta_2(ZSCORE_t) + \beta_3(LOSS_t) \\
&+ \beta_4(SIZE_t) + \beta_5(AGE_t) + \beta_6(RETURN_t) + \beta_7(VOLATILITY_t) \\
&+ \beta_8(LEV_t) + \beta_9(CLEV_t) + \beta_{10}(OCF_t) + \beta_{11}(ANNLAG_t) \\
&+ \beta_{12}(INVESTMENTS_t) + \beta_{13}(NEWFINANCE_t) + \beta_{14}(BIGN_t) \\
&+ \sum Industries + \sum Years + \varepsilon_t,
\end{aligned} \tag{1}
$$

where:

GC OPINION = an indicator variable equal to 1 for firms receiving a first-time going-concern audit opinion, and 0 otherwise;

PREDICT_CHNSV = predicted value of the change in net insider selling volume (*CHNSV*) based on the model of insider trades in Appendix A;

ZSCORE = Altman's Z-score (Altman 1968) for the current year;

LOSS = an indicator variable coded 1 if a firm reports a negative net income (Compustat item NI) for the current year, and 0 otherwise;

SIZE = natural logarithm of total assets at the end of the current year (Compustat item AT);

AGE = natural logarithm of firm age, which is proxied by the number of years of data in Compustat from the start of coverage to the current year;

RETURN = firm's cumulative stock return over the current year;

VOLATILITY = standard deviation of monthly returns over the current year;

LEV = ratio of total liabilities (Compustat item LT) to total assets at the end of the current year;

CLEV = change in *LEV* from the previous year to the current year;

OCF = operating cash flow (Compustat item OANCF) divided by total assets for the current year;

ANNLAG = number of days between the fiscal year-end and earnings announcement date for the current year;

INVESTMENTS = short- and long-term investment securities (including cash and cash equivalents) (Compustat items CHE and IVPT), scaled by total assets;

NEWFINANCE = an indicator variable equal to 1 if a client has a new issuance of equity or debt in the subsequent fiscal year (i.e., nonzero Compustat item DLTIS or the amount of

>   Compustat item SSTK exceeding 5 percent of the firm's market value of equity), and 0
>   otherwise; and
>
> *BIGN* = an indicator variable equal to 1 if the auditor is a member of the Big 5 before 2002 or a
>   member of the Big 4 after 2002, and 0 otherwise.

Equation (1) is estimated using a pooled logistic regression, and the significance level of the coefficients is derived based on robust standard errors clustered by the client firm and the auditor. Appendix B provides further details to motivate the explanatory variables.

IV. RESULTS

Descriptive Statistics

Table 1, Panel A presents descriptive statistics for the distressed firm sample used in estimating Equation (1). We winsorize all continuous variables at the 1st percentile of each side of the statistical distribution, except for *RETURN*.[10] Our sample has a positive mean of 0.167 for the predicted change in net insider selling (*PREDICT_CHNSV*), where *PREDICT_CHNSV* is derived from estimating Equation (A1) in Appendix A. The change in net insider selling (*CHNSV*) has a mean value of −$133,560, and the mean value for the log-transformed is −0.214.[11] About 74 percent of the firm-years have Big N auditors, and 87 percent of firm-years report a loss. Panel A also shows that 58.1 percent of the distressed firms have new financing activities in the subsequent year. The statistics of the other variables in Equation (1) are comparable to those reported in DeFond et al. (2002).

Table 1, Panel B reports descriptive statistics by auditor opinion. In total, 11,528 firm-years receive a clean audit opinion (hereafter, clean firms) and 801 firm years receive a going-concern audit opinion (hereafter, GC firms). Panel B shows that GC firms and clean firms display significant differences in all of the variables used in the regression. Specifically, GC firms have a lower predicted change in net selling activities (*PREDICT_CHNSV*) than clean firms (−0.131 versus 0.189).[12] This evidence is consistent with our prediction that the probability of receiving a going-concern report decreases in insider sales. We also observe a lower level of insider selling for GC firms than for clean firms using the actual change in net insider selling (*CHNSV*) (−0.505 versus −0.191 for the log value and −$319, 590 versus −$114, 250 for the raw value). The negative values for clean firms are likely driven by the significant stock price drops for distressed firms. When we look at the three alternative measures of insider trading activities (*CHNSV2*, *CHNSP*, and *CHNSF* as discussed in Section V), which are less likely to be mechanically affected by stock price, their mean is −0.049, 0.028, and 1.276, respectively, for clean firms.[13]

In addition, fewer firms in the GC group are audited by Big N auditors, while GC firms have a higher frequency of losses, a lower Altman's Z-score, a longer period of announcement lag, and a lower frequency of external financing in the next year. Furthermore, GC firms have lower stock

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[10] All results are both quantitatively and qualitatively similar when variables are not winsorized.

[11] The reason that the mean of the predicted changes differs from that of the actual changes is that a much larger sample is used in the first-stage prediction model as noted in Appendix A. The negative mean of *CHNSV* is mainly driven by the significant stock price drops for distressed firms over time. When *CHNSV* is measured in shares rather than in dollar amount, the mean of *CHSNV* is statistically indistinguishable from zero. In an untabulated test, we replace *PREDICT_CHNSV* with *CHNSV* in Equation (1) and find similar results.

[12] Given that Ma (2001) and Nasser and Gup (2008) find a lower level of insider sales before bankruptcy announcements, these results may not be surprising.

[13] For the matched sample as discussed in Section V, the mean of *PREDICT_CHNSV* and *CHNSV* is 0.197 and −0.051 for clean firms, respectively. The means of the three alternative insider-trading measures (*CHNSV2*, *CHNSP*, and *CHNSF*) are 0.008, 0.052, and 0.777, respectively, for the matched clean firms.

TABLE 1
Descriptive Statistics

Panel A: Descriptive Statistics for the Full Sample

Variable	n	Mean	Median	Std. Dev.	Q1	Q3
PREDICT_CHNSV	12,329	0.167	0.135	1.159	−0.552	0.868
CHNSV ($000)	12,329	−133.56	0	202.47	−196.35	85.49
CHNSV (in log, $000)	12,329	−0.214	0	4.115	−2.512	1.889
BIGN	12,329	0.736	1	0.440	0	1
LOSS	12,329	0.869	1	0.336	1	1
ZSCORE	12,329	0.575	1.034	5.150	−0.147	2.238
ANNLAG	12,329	60.931	55	36.581	38	80
NEWFINANCE	12,329	0.581	1	0.494	0	1
RETURN	12,329	0.023	−0.163	0.966	−0.501	0.241
VOLATILITY	12,329	0.207	0.126	0.175	0.120	0.258
SIZE	12,329	5.038	4.801	1.970	3.676	6.173
LEV	12,329	0.512	0.471	0.418	0.247	0.712
CLEV	12,329	0.052	0.026	0.297	−0.011	0.094
AGE	12,329	2.335	2.197	0.715	1.791	2.833
OCF	12,329	−0.108	−0.021	0.309	−0.141	0.038
INVESTMENT	12,329	0.278	0.174	0.276	0.041	0.461
Clients' Economic Significance Measures						
DEPENDENCE (by audit fee ratio)	11,240	0.121	0.049	0.203	0.022	0.114
DEPENDENCE (by market value ratio)	12,329	0.115	0.041	0.287	0.018	0.102
Auditors' Litigation Concern Measure						
FRAUD	12,329	0.214	0	0.410	0	0
Auditors' Reputation Measures						
EXPERT	12,030	0.467	0	0.499	0	1
OFFICESIZE	11,240	9.156	9.412	1.903	8.019	10.539
Audit Committee Independence Measure						
INDEP	2,060	0.763	1	0.420	1	1

Panel B: Descriptive Statistics of Firm Characteristics by Audit Opinion

	Clean Firms (n = 11,528)		Going-Concern Firms (n = 801)		p-values of the Difference	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
PREDICT_CHNSV	0.189	0.152	−0.131	−0.142	< 0.01	< 0.01
CHNSV ($000)	−114.25	0	−319.59	0	< 0.01	< 0.01
CHNSV (in log, $000)	−0.191	0	−0.505	0	< 0.01	< 0.01
BIGN	0.741	1	0.659	1	< 0.01	< 0.01
LOSS	0.861	1	0.981	1	< 0.01	< 0.01
ZSCORE	0.859	1.132	−3.524	−1.164	< 0.01	< 0.01
ANNLAG	59.107	53	87.186	90	< 0.01	< 0.01
NEWFINANCE	0.595	1	0.488	1	< 0.01	< 0.01
RETURN	0.058	−0.125	−0.443	−0.603	< 0.01	< 0.01
VOLATILITY	0.198	0.166	0.305	0.256	< 0.01	< 0.01

(continued on next page)

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TABLE 1 (continued)

Variable	Clean Firms (n = 11,528)		Going-Concern Firms (n = 801)		p-values of the Difference	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
SIZE	5.113	4.862	3.958	3.693	< 0.01	< 0.01
LEV	0.493	0.456	0.795	0.698	< 0.01	< 0.01
CLEV	0.039	0.023	0.244	0.122	< 0.01	< 0.01
AGE	2.345	2.197	2.183	2.079	< 0.01	< 0.01
OCF	−0.087	−0.021	−0.409	−0.162	< 0.01	< 0.01
INVESTMENT	0.284	0.184	0.196	0.090	< 0.01	< 0.01

(continued on next page)

returns, higher return volatility, smaller size, higher leverage and change in leverage, lower operating cash flow, and a lower level of investment in securities as a percentage of total assets. All these differences are as expected and highlight the importance of controlling for these characteristics when estimating Equation (1). To address the concerns that the inclusion of these variables cannot fully control for the differences between the two groups, we report the results based on a matched sample in Section V.

Table 1, Panel C reports Pearson and Spearman correlations below and above the diagonal, respectively. The correlations between the control variables and the predicted change in insider sales (*PREDICT_CHNSV*) are generally quite low, with a magnitude of 0.131 or less.

Multivariate Analysis

Table 2 reports the results from testing H1 based on a two-step regression method. We find that the predicted change in insider selling activity (*PREDICT_CHNSV*) is negatively associated with the likelihood of receiving a going-concern opinion (coefficient = −0.136, $p < 0.01$). The evidence suggests that auditors are less likely to issue going-concern opinions for firms when insiders sell abnormally more shares. A one standard deviation increase in the predicted change of net insider sales, which translates into an increase of roughly $60,250 in the change of net insider sales, reduces the likelihood of receiving a going-concern opinion by 1.39 percent, which is around 21 percent of the mean going-concern rate for our sample. The economic magnitude of 1.39 percent is comparable to other factors documented in prior studies, such as 1.26 percent for auditor office size (Francis and Yu 2009) and 1 percent for total fee ratios (Li 2009). The marginal effect of the change in the level of insider selling compares with that of other determinants of going-concern opinions, such as firm size (−1.22 percent), stock returns (−1.35 percent), leverage (1.25 percent), and Big N auditors (1.24 percent).[14]

The coefficients on the control variables are generally in the predicted directions. Big N auditors are more likely to issue going-concern opinions (Mutchler et al. 1997). On the one hand, auditors are more likely to issue going-concern opinions for firms with losses, longer announcement lags, higher return volatility, and higher leverage. On the other hand, firms are less likely to receive

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[14] The model performs well in predicting going-concern opinions as shown by the high value of concordance (0.904). When the model is estimated without the measure of insider selling activity (i.e., *PREDICT_CHNSV*), the concordance value reduces to 0.900. Though *PREDICT_CHNSV* brings an incremental concordance of only 0.004, it is comparable to that of other control variables in Equation (1), such as *SIZE*, *LOSS*, *AGE*, *LEV*, *OCF*, and *BIGN*, whose incremental concordance ranges from 0.001 to 0.006.

TABLE 1 (continued)

Panel C: Pearson and Spearman Correlation Coefficients (n = 12,329)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) PREDICT_CHNSV		-0.014	**-0.128**	**0.084**	0.003	**0.019**	**-0.027**	**-0.138**	**0.032**	**-0.051**	**-0.067**	0.017	0.002	0.013	**-0.124**
(2) BIGN	-0.021		**0.039**	**-0.019**	**-0.291**	**0.088**	**0.037**	-0.013	**0.299**	-0.002	0.000	**-0.047**	**0.031**	**0.126**	**-0.046**
(3) LOSS	**-0.131**	**0.039**		**-0.186**	**0.038**	-0.013	**-0.156**	**0.214**	**-0.119**	**-0.084**	**0.195**	**-0.123**	**0.078**	**0.164**	**0.087**
(4) ZSCORE	**0.097**	-0.016	**-0.113**		**-0.061**	**0.027**	**0.125**	**-0.202**	**0.147**	**-0.359**	**-0.323**	**0.132**	**0.415**	**-0.173**	**-0.227**
(5) ANNLAG	0.015	**-0.204**	**0.034**	**-0.042**		**-0.172**	**-0.065**	**0.029**	**-0.382**	**0.084**	**0.083**	**0.095**	**-0.077**	**-0.188**	**0.218**
(6) NEWFINANCE	0.022	**0.102**	-0.012	0.001	**-0.144**		**0.144**	**0.058**	**0.061**	**-0.065**	**-0.059**	**-0.068**	-0.002	**0.041**	**-0.105**
(7) RETURN	**-0.025**	**0.037**	**-0.059**	**0.034**	**-0.048**	**0.115**		**-0.184**	**0.067**	**-0.037**	**-0.162**	**0.131**	**0.141**	0.003	**-0.178**
(8) VOLATILITY	**-0.125**	-0.016	**0.163**	**-0.159**	**0.019**	**0.038**	**0.089**		**-0.295**	**-0.097**	**0.111**	**-0.300**	**-0.284**	**0.185**	**0.186**
(9) SIZE	**0.023**	**0.286**	**-0.151**	**0.178**	**-0.255**	**0.069**	**-0.033**	**-0.258**		**0.326**	**-0.040**	**0.129**	**0.407**	**-0.281**	**-0.148**
(10) LEV	**-0.056**	-0.004	**-0.038**	**-0.284**	**0.099**	**-0.053**	**-0.032**	**-0.024**	**0.213**		**0.346**	**0.183**	**0.191**	**-0.496**	**0.149**
(11) CLEV	**-0.051**	-0.004	**0.094**	**-0.234**	**0.068**	**-0.035**	**-0.061**	**0.053**	**-0.052**	**0.677**		**-0.073**	**-0.098**	**-0.064**	**0.182**
(12) AGE	0.017	**-0.034**	**-0.120**	**0.068**	**0.052**	**-0.062**	**0.032**	**-0.256**	**0.191**	**0.117**	**-0.039**		**0.217**	**-0.246**	**-0.053**
(13) OCF	0.003	**0.025**	**-0.057**	**0.555**	**-0.060**	0.006	**0.068**	**-0.226**	**0.372**	**-0.027**	**-0.174**	**0.190**		**-0.426**	**-0.147**
(14) INVESTMENT	**0.018**	**0.121**	**0.158**	**-0.103**	**-0.137**	**0.049**	**0.047**	**0.129**	**-0.287**	**-0.316**	**-0.037**	**-0.251**	**-0.360**		**-0.083**
(15) GC OPINION	**-0.126**	**-0.046**	**0.087**	**-0.210**	**0.189**	**-0.126**	**-0.131**	**0.185**	**-0.145**	**0.178**	**0.170**	**-0.056**	**-0.257**	**-0.078**	

Table 1 reports summary statistics for the full sample in Panel A and subsamples partitioned by the two types of audit opinions in Panel B. Panel C presents Pearson (below the diagonal) and Spearman (above the diagonal) correlations, with the correlation coefficients with a significance level of 0.05 or better in bold. All continuous variables, except stock returns (*RETURN*), are winsorized at the 1st and 99th percentile.
All variables are defined in Appendix C.

TABLE 2

Insider Trading Incentives and the Likelihood of a Going-Concern Opinion

$$
\begin{aligned}
Pr(GC\ OPINION_t = 1) = {} & \beta_0 + \beta_1(PREDICT\_CHNSV_t) + \beta_2(ZSCORE_t) + \beta_3(LOSS_t) \\
& + \beta_4(SIZE_t) + \beta_5(AGE_t) + \beta_6(RETURN_t) + \beta_7(VOLATILITY_t) \\
& + \beta_8(LEV_t) + \beta_9(CLEV_t) + \beta_{10}(OCF_t) + \beta_{11}(ANNLAG_t) \\
& + \beta_{12}(INVESTMENTS_t) + \beta_{13}(NEWFINANCE_t) + \beta_{14}(BIGN_t) \\
& + \sum Industries + \sum Years + \varepsilon_t.
\end{aligned}
\tag{1}
$$

Variables	Coeff. Estimate	Wald Chi-Square	Marginal Effects
Intercept	−3.608***	41.24	
PREDICT_CHNSV	−0.136***	12.99	−1.39%
ZSCORE	−0.093***	31.15	−3.13%
LOSS	1.582***	26.98	2.27%
SIZE	−0.177***	31.75	−1.22%
AGE	−0.101*	3.04	−1.05%
RETURN	−0.848***	48.28	−1.35%
VOLATILITY	3.011***	103.53	1.12%
LEV	0.845***	22.52	1.25%
CLEV	0.446	2.52	0.54%
OCF	−1.264***	32.91	−3.25%
ANNLAG	0.016***	157.97	3.49%
INVESTMENT	−2.443***	76.86	−4.78%
NEWFINANCE	−0.457***	26.44	−1.98%
BIGN	0.226**	4.87	1.24%
Year fixed effects		Yes	
Industry fixed effects		Yes	
Pseudo R^2		0.348	
Percent Concordant		0.904	
n		12,329	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively.
This table reports the results of the second-stage regression testing the association between insider trading and the likelihood of receiving a going-concern opinion. *PREDICT_CHNSV* is the predicted change in insider sales obtained from the first-stage regression Equation (A1) as shown in Appendix A. Robust standard errors clustered at the client firm and auditor levels are used to derive the Wald statistics.
All variables for Equation (1) are defined in Appendix C.

going-concern opinions when they are larger and older and when they have higher Z-scores, new financing activities, higher past stock returns, higher operating cash flows, and larger amounts of cash and investment securities. In summary, the results in Table 2 support the prediction in H1 that abnormally high insider sales are associated with a lower likelihood of receiving a going-concern opinion.

Cross-Sectional Analysis

To test H2 through H5, we conduct four cross-sectional analyses. Specifically, we augment Equation (1) by including an additional variable that measures clients' economic significance,

auditors' litigation concerns, auditors' reputation, and audit committee independence, alternately, and their interaction with *PREDICT_CHNSV*. Table 3 reports the results of these analyses.

Economic Significance of Clients

Panel A of Table 3 presents the results from testing H2 by adding a variable for auditor economic dependence (*DEPENDENCE*). Following prior studies (e.g., Reynolds and Francis 2000), we proxy auditor economic dependence by fee dependence at the auditor local office level with descriptive statistics presented in Panel A of Table 1. Specifically, we gauge the economic significance of clients as the ratio of a specific client's audit fee (or market value) to the total audit fees (or total market value) for all the clients of an incumbent auditor's local office, where fees and clients' market values are in natural logarithm. As shown in Panel A of Table 3, the coefficient on *PREDICT_CHNSV* continues to load negatively at $p < 0.05$. Our focus, the interaction term *DEPENDENCE * PREDICT_CHNSV*, loads negatively and is statistically significant at $p < 0.05$ for both measures of clients' economic significance. Thus, we find evidence consistent with H2.

Auditors' Litigation Concerns

Panel B of Table 3 presents the results from testing H3 by adding a variable for auditor litigation risk (*FRAUD*). Previous research provides evidence that fraud conducted by clients increases auditors' litigation risk (e.g., Palmrose 1988; Carcello and Palmrose 1994; Bonner et al. 1998). Auditors likely face a higher risk of litigation when their clients announce any type of fraud.[15] Specifically, we define the indicator variable, *FRAUD*, as 1 if any of a local audit office's clients announced a financial fraud in the most recent two years, and 0 otherwise. Panel A of Table 1 shows that, for 21.4 percent of firm years, the incumbent auditors face a higher risk of litigation in relation to financial fraud announced by clients. The main effect of *PREDICT_CHNSV* continues to be negative and significant. Consistent with H3, the interaction of *PREDICT_CHNSV* with *FRAUD* has a positive effect on the issuance of going-concern opinions at the 0.05 significance level. These results suggest that auditors are more independent and conservative in issuing going-concern reports when facing a higher risk of litigation. A Wald test ($\beta_1 + \beta_3 = 0$) rejects the null (Chi-square = 4.78, $p = 0.03$), suggesting that insider trading incentives still have an effect on the issuance of going-concern opinions even when auditors have a high risk of litigation, although the effect is much smaller.

Auditors' Reputation Concerns

Panel C of Table 3 presents the results from testing H4 by adding a variable for auditor reputation (*EXPERT* and *OFFICESIZE*). Following prior studies, we identify an auditor as an expert in a certain industry if the auditor has a dominant market share in that industry. Specifically, *EXPERT* is coded 1 if the incumbent auditor ranks as a top-two firm in the client's industry (two-digit SIC) in terms of market share of sales, and 0 otherwise. Results are similar when we define *EXPERT* as 1 for the top three industry leaders in the audit market.[16] Aside from industry specialization, we use office size as an alternative measure of auditor reputation. Francis and Yu (2009) show that the office size of Big 4 auditors is positively associated with audit quality. Following their study, we measure local office size (*OFFICESIZE*) by the natural logarithm of total audit fees. Panel A of Table 1 presents descriptive statistics for *EXPERT* and *OFFICESIZE*.

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[15] Accounting frauds are irregularities as defined in Hennes et al. (2008). We thank Andrew Leone for sharing the dataset of all GAO restatements at his personal website: http://sbaleone.bus.miami.edu/.

[16] Prior studies provide evidence that auditor reputation in regard to industry specialization is related to higher audit quality (e.g., Craswell et al. 1995; Dunn and Mayhew 2002; Chung and Kallapur 2003; Lim and Tan 2008).

TABLE 3

Cross-Sectional Analysis of the Association between Insider Trading and the Likelihood of a Going-Concern Opinion

$$
\begin{aligned}
Pr(GC\ OPINION_t = 1) = {} & \beta_0 + \beta_1(PREDICT\_CHNSV_t) + \beta_2(EXPERIMENT_t) \\
& + \beta_3(EXPERIMENT_t * PREDICT\_CHNSV_t) + \beta_4(ZSCORE_t) \\
& + \beta_5(LOSS_t) + \beta_6(SIZE_t) + \beta_7(AGE_t) + \beta_8(RETURN_t) \\
& + \beta_9(VOLATILITY_t) + \beta_{10}(LEV_t) + \beta_{11}(CLEV_t) + \beta_{12}(OCF_t) \\
& + \beta_{13}(REPORTLAG_t) + \beta_{14}(INVESTMENTS_t) \\
& + \beta_{15}(NEWFINANCE_t) + \beta_{16}(BIGN_t) + \sum Industries \\
& + \sum Years + \varepsilon_t.
\end{aligned} \tag{1}
$$

Panel A: Clients' Economic Significance

	Clients' Economic Significance Measure					
	Audit Fee Ratio			Market Value Ratio		
Variables	**Coeff. Estimate**	**Wald Chi-Square**	**Marginal Effects**	**Coeff. Estimate**	**Wald Chi-Square**	**Marginal Effects**
Intercept	−3.044***	11.42		−2.988***	23.48	
PREDICT_CHNSV	−0.082**	5.96	−0.87%	−0.076**	6.05	−0.79%
DEPENDENCE	−0.288	1.35	−1.15%	−0.312**	4.06	−1.22%
DEPENDENCE * PREDICT_CHNSV	−0.205**	3.92	−2.45%	−0.226**	4.22	−2.51%
Control variables		Yes			Yes	
Year fixed effects		Yes			Yes	
Industry fixed effects		Yes			Yes	
Pseudo R^2		0.349			0.351	
Percent Concordant		0.902			0.907	
n		11,240			12,329	

Panel B: Auditor Litigation Concern

Variables	**Coeff. Estimate**	**Wald Chi-Square**	**Marginal Effects**
Intercept	−3.078***	33.28	
PREDICT_CHNSV	−0.195***	7.54	−1.67%
FRAUD	0.088*	3.56	0.78%
FRAUD * PREDICT_CHNSV	0.103**	4.27	0.88%
Control variables		Yes	
Year fixed effects		Yes	
Industry fixed effects		Yes	
Pseudo R^2		0.351	
Percent Concordant		0.906	
n		12,329	

TABLE 3 (continued)

Panel C: Auditor Reputation Concern

| | Auditor Reputation Measures | | | | | |
| | EXPERT | | | OFFICESIZE | | |
Variables	Coeff. Estimate	Wald Chi-Square	Marginal Effects	Coeff. Estimate	Wald Chi-Square	Marginal Effects
Intercept	−3.155***	12.77		−2.867***	21.36	
PREDICT_CHNSV	−0.188**	5.87	−1.62%	−0.172**	6.33	−1.58%
EXPERT	0.036	0.98	0.25%			
EXPERT ∗ PREDICT_CHNSV	0.106**	4.21	1.18%			
OFFICESIZE				0.065**	4.06	0.48%
OFFICESIZE ∗ PREDICT_CHNSV				0.027**	4.35	0.96%
Control variables		Yes			Yes	
Year fixed effects		Yes			Yes	
Industry fixed effects		Yes			Yes	
Pseudo R^2		0.351			0.348	
Percent Concordant		0.906			0.904	
n		12,030			11,240	

Panel D: Audit Committee Independence

Variables	Coeff. Estimate	Wald Chi-Square	Marginal Effects
Intercept	−11.979***	25.05	
PREDICT_CHNSV	−0.302**	4.07	−1.70%
INDEP	0.473	1.19	0.42%
INDEP ∗ PREDICT_CHNSV	0.279**	4.04	1.63%
Control variables		Yes	
Year fixed effects		Yes	
Industry fixed effects		Yes	
Pseudo R^2		0.235	
Percent Concordant		0.844	
n		2,060	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively.
This table reports the results of the second-stage regression testing the effect of clients' economic significance, auditor litigation concern and reputation, and audit committee independence on the association between insider trading and the likelihood of receiving a going-concern opinion. The variable, *EXPERIMENT*, in the regression equation takes alternative measures of clients' economic significance (*DEPENDENCE*), auditor litigation risk (*FRAUD*), auditor reputation (*EXPERT*), and audit committee independence (*INDEP*). Robust standard errors clustered at the client firm and auditor levels are used to derive the Wald statistics.
All variables, including the two measures of *DEPENDENCE* (audit fee ratio and market value ratio), are defined in Appendix C.

Consistent with our expectation, the results in Panel C of Table 3 show a positive coefficient on the interaction between *PREDICT_CHNSV* and *EXPERT*, significant at $p < 0.05$. A test of ($\beta_1 + \beta_3 = 0$) rejects the null with a p-value of 0.08, suggesting that the effect of insider trading on going-concern opinions still exists for firms with reputable auditors, notwithstanding a significantly

smaller effect. Similarly, the interaction between *PREDICT_CHNSV* and *OFFICESIZE* also loads positively and is statistically significant at the 0.05 level.[17] The test of $(\beta_1 + \beta_3 = 0)$ is rejected with a p-value of 0.02. To ease interpretation, we create an indicator *BIGOFFICE* for those firms whose auditors' local office size is larger than the sample median and replace *OFFICESIZE* with *BIGOFFICE* in the regression. We find a positive coefficient on the interaction *BIGOFFICE* ∗ *PREDICT_CHNSV*. A test of $(\beta_1 + \beta_3 = 0)$ rejects the null with a p-value of 0.07, suggesting that insiders' selling incentives still affect the issuance of going-concern opinions by reputable auditors. Taken together, the results imply that insider trading incentives have a smaller effect on the likelihood of receiving a going-concern opinion when auditors are more reputable.

Audit Committee Independence

Panel D of Table 3 reports the results from testing H5 by adding a variable for audit committee independence (*INDEP*). We obtain audit committee information from the Investor Responsibility Research Center (IRRC). Note the definition of independent director by the IRRC is more restrictive than the one set forth by the SEC rule and stock exchanges such as NYSE and NASDAQ.[18] It is unclear *ex ante* whether such a discrepancy will compromise board quality and provide managers with opportunities to influence auditors. We thus follow prior studies and abide by the IRRC definition of independent director (Duchin et al. 2010; Guo and Masulis 2012). An indicator variable, *INDEP*, is defined as 1 if a client's audit committee is fully represented by independent directors, and 0 otherwise. As reported in Panel A of Table 1, 76.3 percent of the 2,060 firm years have a fully independent audit committee.[19]

Table 3, Panel D shows a positive but insignificant coefficient on *INDEP*, suggesting that audit committee independence *per se* does not affect the likelihood of auditors issuing going-concern opinions. Consistent with our prediction in H5, the coefficient on the interaction *INDEP* ∗ *PREDICT_CHNSV* is positive and statistically significant at p < 0.05. A further test of $(\beta_1 + \beta_3 = 0)$ fails to reject the null with a p-value of 0.323, suggesting that the insider trading effect on going-concern opinion issuance is muted for firms with fully independent audit committees.

V. ADDITIONAL ANALYSIS, SENSITIVITY TESTS, AND FURTHER DISCUSSION

Endogeneity Issues

A System of Two Structural Models Estimation

Our analyses of insider trading use the predicted change in insider sales to control for endogeneity between insider trading and auditor opinion. In addition, the cross-sectional analyses in

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[17] We also use *BIGN* as an alternative proxy for auditor reputation, where *BIGN* is as previously defined. The coefficient on the interaction of *BIGN* with *PREDICT_CHNSV* is positive and statistically insignificant at the 0.10 level.

[18] For example, according to the IRRC, a director who is a former employee of the firm is not independent, even if the employment terminated more than three years before the director was seated. Another example is that a director who has business relations with the firm is not independent according to the IRRC, even if the business relationship is insignificant. In contrast, Rule 10A-3 (SOX), NYSE, and NASDAQ allow former employees to become independent directors if more than three years have passed since their employment and also allow independent directors to have business relations with the firm as long as the transactions are not significant.

[19] Alternatively, we use audit committee members' trading activities in their own firms' stocks to gauge audit committee independence. We calculate the net trading activities as the number of sale transactions minus the number of purchase transactions for all audit committee members over a fiscal year. We then define a dummy variable equal to 1 if the net trading activities are positive, and 0 otherwise. Based on this sample, we find the audit committee members' selling activity strengthens the negative relation between insider trading and going-concern opinions (untabulated).

the previous section provide further support that insiders' trading incentives influence the likelihood of auditors issuing going-concern reports. Auditors with greater litigation concerns and higher reputation are more likely to issue going-concern opinions, all else being equal. If only the reduction of insider selling in anticipation of a forthcoming going-concern opinion drives our results, then we would expect the results to be more pronounced for auditors with greater litigation concerns and higher reputation and for clients with fully independent audit committees. The evidence, however, points in the opposite direction, which is consistent with the likelihood that managers discourage auditors from issuing going-concern opinions when they sell abnormally more shares.

To further illuminate this issue, we estimate a system of two structural models. One equation models auditor opinion based on Equation (1), using *CHNSV* instead of *PREDICT_CHNSV* as the endogenous independent variable. The other equation models insider trading based on Equation (A1) in Appendix A with three additional variables: contemporaneous auditor opinion (GC_t), which is the endogenous independent variable, current year's accumulated stock returns (RET_t), and the change in return-on-equity for the current year (ΔROE_t). Following DeFond et al. (2002), we use a probit regression to estimate the auditor opinion model and an OLS regression to estimate the insider-trading model. The untabulated results show that the coefficient on *GC* is positive but not statistically significant (p = 0.57) in the insider trading model. In contrast, the coefficient on *CHNSV* is significantly negative (p < 0.01) in the auditor opinion model. Therefore, our results are robust to the use of a system of two equations.

Auditor Switch Analysis

A natural extension is to investigate whether auditors benefit from acquiescing to management when insiders have abnormally high stock sales. Using a sample of 10,494 clean firm years, we estimate a logistic model by regressing an indicator variable, *SWITCH*, on *PREDICT_CHNSV* and a set of control variables.[20] The indicator *SWITCH* is equal to 1 if an auditor change occurs in the next fiscal year, and 0 otherwise. Results (untabulated) show that among the distressed firms receiving clean opinions, 12.8 percent experience an auditor change during the next fiscal year. More importantly, untabulated results show that the variable of interest, *PREDICT_CHNSV*, has a significantly negative coefficient (p < 0.01) suggesting that clean firms with higher levels of abnormal insider sales are less likely to have an auditor switch in the future. The evidence is consistent with the notion that auditors can retain clients by acquiescing to management pressure but inconsistent with the alternative explanation that insiders reduce their selling in anticipation of going-concern reports.

Pre- and Post-SOX

Auditor independence increased in various ways after the 2002 Sarbanes-Oxley Act.[21] Recent research documents that auditors, particularly in non-Big N firms, became more conservative in issuing going-concern reports after SOX and that audit committees became more independent

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[20] The set of control variables include change in firm size and change in operating cash flows from $t-1$ to t, external financing, change in times-interest-earned from $t-1$ to t, industry market share of an auditor in the client industry, Altman's Z-score, leverage, loss indicator, industry fixed effects and year fixed effects.

[21] First, the act prohibited auditors from providing nonaudit consulting services, with the aim of enhancing auditors' independence. Second, SOX empowered federal courts and the SEC to impose equitable remedies for violations of federal securities laws, which suggests civil monetary penalties against auditors increased following SOX (Rashkover and Winter 2005). Third, the creation of the PCAOB could increase auditors' exposure to legal liability *vis-à-vis* penalties for audit-related violations. Fourth, SOX requires internal audit committees to take more responsibility to ensure the autonomy of external auditors without being influenced by management.

(Hoitash and Hoitash 2008; Myers et al. 2011). In addition, prior studies find that insiders' purchases and sales dropped considerably and that insiders became more careful in exploiting negative information after SOX (Chang et al. 2011; Lee et al. 2011). If auditor independence increased while insiders trading on private information decreased after SOX, then we would expect the negative relation as stated in H1 to become weaker after SOX.

Different sections of SOX took effect on various dates. For example, Section 301 on auditor independence became effective on May 6, 2003, while the compliance for Section 404 and related disclosures were required for fiscal-years ending after November 15, 2004. Following prior studies (Iliev 2010; Li et al. 2010; Krishnan et al. 2011), we partition our sample period into pre-SOX period (2000 through 2003) and post-SOX period (2004 through 2007).[22] We then estimate Equation (1) for the two sub-periods jointly in a single regression, allowing all coefficients to differ across the two periods and test the difference in the coefficient estimates across the two periods. Results reported in Table 4 show that the estimated coefficient on *PREDICT_CHNSV* is negative and statistically significant both before and after SOX. However, the absolute magnitude is much smaller after SOX, and the difference in the coefficient estimate on *PREDICT_CHNSV* is statistically significant ($p < 0.05$). In addition, the coefficient estimate on *BIGN* increases significantly after SOX, suggesting that Big N auditors are more likely to issue going-concern opinions after SOX. Taken as a whole, these results indicate that auditor independence increased after SOX.

Sensitivity Tests

Alternative Sample

Clean-opinion firms differ from going-concern firms, as demonstrated in Panel B of Table 1. Thus, although we include a comprehensive set of control variables in the analysis, one may be still concerned that our results are driven by correlated omitted variables. We address this concern using a matching procedure to find a sample of clean firms that have similar fundamental characteristics as the GC firms in year *t*. More specifically, we match a clean firm with a GC firm in the current year by first sorting all firms into deciles based on annual stock return and Altman's Z-score independently. We then select all clean firms that are in the same decile of stock return and in the same decile of Altman's Z-score as the GC firm. Among these clean firms, we calculate their matching scores that are the sum of their distances to the GC firm in terms of stock performance and Altman's Z-score, respectively, and select the one with the smallest matching score.[23] This matching procedure yields 801 unique clean firms matched for the 801 *GC* firms.

The comparison of the fundamentals between the two groups is tabulated in Panel A of Table 5. We find no significant difference between the matched clean firms and GC firms in stock returns, Altman's Z-score and firm size, which are three major determinants of auditors' issuance of GC opinions and insiders' decision to trade. There is no significant difference in other firm characteristics between GC firms and the matched clean firms such as return volatility, operating cash flows, and the indicators for Big N auditors and for loss firms. Overall, our matching procedure seems to work pretty well in identifying clean firms with similar fundamentals as the GC firms.

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[22] Our results are both quantitatively and qualitatively similar when we use 2003 as the cutoff for the pre- and the post-SOX period.

[23] The distance of stock performance (Altman's Z-score) is measured as the absolute value of the difference in annual stock returns (Altman's Z-scores) between a clean firm and the GC firm, scaled by the absolute value of the GC firm's annual stock return (Altman's Z-score).

TABLE 4

Insider Trading and the Likelihood of Receiving a Going-Concern Opinion before and after SOX

$$
\begin{aligned}
Pr(GC\ OPINION_t = 1) = {} & \beta_0 + \beta_1(PREDICT\_CHNSV_t) + \beta_2(ZSCORE_t) + \beta_3(LOSS_t) \\
& + \beta_4(SIZE_t) + \beta_5(AGE_t) + \beta_6(RETURN_t) + \beta_7(VOLATILITY_t) \\
& + \beta_8(LEV_t) + \beta_9(CLEV_t) + \beta_{10}(OCF_t) + \beta_{11}(ANNLAG_t) \\
& + \beta_{12}(INVESTMENTS_t) + \beta_{13}(NEWFINANCE_t) + \beta_{14}(BIGN_t) \\
& + \sum Industries + \sum Years + \varepsilon_t.
\end{aligned}
$$
(1)

	Pre-SOX		Post-SOX		Pre- versus Post-SOX	
Variables	**Coeff. Estimate**	**Wald Chi-Square**	**Coeff. Estimate**	**Wald Chi-Square**	**Coeff. Difference**	**Wald Chi-Square**
Intercept	−3.285***	22.42	−2.955***	18.45	0.330	1.15
PREDICT_CHNSV	−0.171***	8.55	−0.084*	2.94	0.087**	4.12
ZSCORE	−0.112***	29.94	−0.055*	3.89	0.057*	3.03
LOSS	1.452***	16.52	1.968***	9.24	0.516	0.46
SIZE	−0.066***	8.11	−0.254***	10.37	−0.189**	4.02
AGE	−0.137*	3.09	−0.136	0.96	0.001	0.00
RETURN	−0.676***	31.67	−1.154***	12.45	−0.478*	2.81
VOLATILITY	2.642***	70.89	6.074***	39.65	3.432***	7.28
LEV	0.635***	10.45	1.203***	11.27	0.568*	2.98
CLEV	0.381	1.37	0.186	0.25	−0.195	0.21
OCF	−1.317***	29.51	−1.888**	6.98	−0.571	1.87
ANNLAG	0.021***	98.23	0.013***	38.86	−0.008***	10.72
INVESTMENT	−2.884***	69.42	−1.893***	7.35	−0.991**	3.94
NEWFINANCE	−0.656***	61.04	−0.675***	11.32	−0.019	0.85
BIGN	0.181*	3.35	0.613***	7.28	0.432**	4.58
Year fixed effects			Yes			
Industry fixed effects			Yes			
Pseudo R^2			0.352			
Percent Concordant			0.908			
n			12,329			

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively.
This table reports the results of the second-stage regression based on Equation (1) for the pre-SOX (2000 through 2003) and post-SOX (2004 through 2007) periods and the differences across these two periods. Robust standard errors clustered at the client firm and auditor levels are used to derive the Wald statistics.
All variables are defined in Appendix C.

Based on this matched sample, we re-run the main analysis; the results are reported in Panel B of Table 5. As can be seen, the coefficient on our main variable of interest, *PREDICT_CHNSV*, continues to be significantly negative (p < 0.05). Moreover, the marginal effect of the change in net insider sales is much higher compared to that based on the full sample as reported in Table 2. Overall, our results are less likely to be driven by correlated omitted firm characteristics.

TABLE 5

Insider Trading and the Likelihood of Receiving a Going-Concern Opinion based on a Matched Sample

$$
\begin{aligned}
Pr(GC\ OPINION_t = 1) = {} & \beta_0 + \beta_1(PREDICT\_CHNSV_t) + \beta_2(ZSCORE_t) + \beta_3(LOSS_t) \\
& + \beta_4(SIZE_t) + \beta_5(AGE_t) + \beta_6(RETURN_t) + \beta_7(VOLATILITY_t) \\
& + \beta_8(LEV_t) + \beta_9(CLEV_t) + \beta_{10}(OCF_t) + \beta_{11}(ANNLAG_t) \\
& + \beta_{12}(INVESTMENTS_t) + \beta_{13}(NEWFINANCE_t) + \beta_{14}(BIGN_t) \\
& + \sum Industries + \sum Years + \varepsilon_t.
\end{aligned}
\qquad (1)
$$

Panel A: Comparison in Firm Characteristics between GC Firms and Matched Clean Firms

Variable	Matched Clean Firms (n = 801)		Going-Concern Firms (n = 801)		p-values of the Difference	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
BIGN	0.678	1	0.659	1	0.23	0.19
LOSS	0.979	1	0.981	1	0.57	0.37
ZSCORE	−3.631	−1.227	−3.524	−1.164	0.18	0.21
ANNLAG	60.298	58	87.186	90	< 0.01	< 0.01
NEWFINANCE	0.755	1	0.488	1	< 0.01	< 0.01
RETURN	−0.432	−0.627	−0.443	−0.603	0.67	0.60
VOLATILITY	0.285	0.259	0.305	0.256	0.32	0.26
SIZE	4.022	3.721	3.958	3.693	0.35	0.31
LEV	0.630	0.534	0.795	0.698	< 0.01	< 0.01
CLEV	0.171	0.091	0.244	0.122	< 0.01	< 0.01
AGE	2.035	1.946	2.183	2.079	< 0.01	< 0.01
OCF	−0.500	−0.278	−0.409	−0.162	0.34	0.12
INVESTMENT	0.379	0.346	0.196	0.090	< 0.01	< 0.01

Panel B: Regression Results

	PREDICT_CHNSV		
Variables	**Coeff. Estimate**	**Wald Chi-Square**	**Marginal Effects**
Intercept	0.789	1.06	
PREDICT_CHNSV	−0.155**	6.09	−14.92%
ZSCORE	−0.009	0.17	−0.35%
LOSS	1.213*	3.44	13.41%
SIZE	−0.104	2.29	−4.26%
AGE	−0.279**	4.61	−9.27%
RETURN	−0.172	1.14	−7.03%
VOLATILITY	1.669*	3.32	2.64%
LEV	0.713***	8.29	13.77%
CLEV	−0.027	0.01	−0.24%
OCF	−0.686*	3.73	−9.71%
ANNLAG	0.017***	39.39	33.49%

(continued on next page)

TABLE 5 (continued)

| Variables | *PREDICT_CHNSV* | | |
	Coeff. Estimate	Wald Chi-Square	Marginal Effects
INVESTMENT	−2.989***	54.36	−30.27%
NEWFINANCE	−1.241***	60.64	−24.06%
BIGN	0.423***	7.98	13.03%
Year fixed effects		Yes	
Industry fixed effects		Yes	
Pseudo R^2		0.216	
Percent Concordant		0.832	
n		1,602	

*, **, *** Denote significance level at the 0.10, 0.05, and 0.01 level, respectively.
This table reports the relation between insider selling and the probability of firms receiving a GC opinion based on the matched sample. The detailed matching procedure is described in Section V. Panel A presents the comparison in firm characteristics between the GC firms and their matched clean firms. Panel B reports the regression results from estimating Equation (1) based on the matched sample. Wald statistics are based on the robust standard errors clustered at the client firm and auditor level.
All variables are defined in Appendix C.

Controlling for Earnings Management

Besides exerting influence on auditors, managers who have strong selling incentives may have other ways, such as earnings management, to avoid going-concern opinions. Therefore, earnings management may be a correlated omitted variable. To address this concern, we explicitly control for earnings management, where earnings management is proxied by signed performance-controlled discretionary accruals following Kothari et al. (2005), and find similar results.

Other Alternative Explanations and Alternative Measures of Insider Trading

We conduct a batch of sensitivity tests. First, to address the possibility that managers' restructuring plans drive the documented negative relation between abnormal insider sales and going-concern opinions, we include additional control variables.[24,25] Second, we apply three alternative measures of insider selling activity: (1) the net selling volumes measured as the net number of shares sold (*NSV2*); (2) the net number of selling persons (*NSP*), measured as the difference in the total number of insiders who are net sellers versus those who are net buyers in the current year, as used in prior studies (Karpoff and Lee 1991; Lee et al. 1992); and (3) the net number of sale transactions (*NSF*), as used in Huddart et al. (2007), which is the difference between the number of sale transactions and the number of purchase transactions. Third, we take into

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[24] The control variables include dividend cuts, changes in capital and R&D expenditures, debt issuance, equity issuance, and restructuring activities such as spin-offs and asset sales measured in the current fiscal year. Untabulated results show that firms are less likely to receive going-concern opinions if they obtain external financing, undertake corporate restructuring, reduce dividend payout, or cut discretionary expenses. These results are consistent with prior studies (Mutchler et al. 1997; Behn et al. 2001). The results are similar when we measure restructuring activities in either year *t* or year *t*+1.

[25] In addition, we compare firms with high predicted changes in insider sales to firms with low predicted changes in insider sales. These activities, such as corporate restructure, debt or equity issuance, dividend cuts, and change in discretionary expenses, etc., show no statistical differences between the two groups of firms (untabulated).

account the effects of earnings announcements by including changes in earnings, as well as abnormal stock returns around earnings announcements, in the regressions. All reported findings are robust to these procedures. Finally, to investigate whether insiders trade opportunistically ahead of an event (the lack of going-concern opinion issuance), we test if the insider-selling pattern reverses afterward. We find that insider sales decrease in year $t+1$ for both the full sample and the matched sample, an indication of opportunistic insider trading in t. Furthermore, we conduct a placebo test using insider trading in $t+1$ as the variable of interest in Equation (1). Untabulated results show that the coefficient on the measure of insider selling becomes insignificant regardless of whether we use the predicted change or actual change in net insider selling, suggesting that our main findings likely reflect insiders' opportunistic trading behavior.

Additional Analyses

The need for a first-time going-concern report will not be apparent in many cases until late in the year. Indeed, we find that abnormal insider trading in the late period spanning (-90 days, -1 day) prior to earnings announcements has a stronger negative relation with going-concern opinions than that in the early period spanning (-365 days, -91 days) prior to earnings announcements.

Insider trading followed by an immediate bankruptcy filing will attract regulatory attention regardless of the auditor opinion. Thus, we expect our hypothesized relation to be stronger among firms with lower probability of failure. Using Altman's Z-score to measure the probability of failure, we find results consistent with this prediction. In addition, we re-run our main analysis using actual changes in net insider selling volume (*CHNSV*) and obtain similar results. Last, we re-run Equation (1) separately for surviving firms (i.e., firms without filing for bankruptcy in the subsequent two years) and bankrupt firms (i.e., firms filing for bankruptcy in the subsequent two years). This procedure is designed to identify whether the hypothesized relation is driven by auditors being less conservative (among survivors) or being too optimistic (among bankrupt firms). We find that the hypothesized relation holds for both groups with no statistical difference in this relation between the two groups.[26]

Further Discussion

SEC Rule 10b5-1, implemented in October 2000, creates a safe harbor against claims of informed trading for trades that are planned in advance. If it is common practice that insiders in distressed firms establish such plans to reduce litigation risk, particularly when they expect auditors to issue a going-concern opinion, then managers can trade safely without worrying about the audit opinion. However, the strong negative relation between insider trading and going-concern opinions that we report suggests that either establishing a 10b5-1 plan is costly for distressed firms (i.e., use of the 10b5-1 plan is not widespread among distressed firms) or that the plans are not effective in protecting insiders from legal exposure.[27]

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[26] Further analysis indicates that, among the firms that subsequently filed for bankruptcy, the predicted changes in insider sales are much higher when they receive clean opinions, compared with firms receiving going-concern opinions. This result holds for both univariate and multivariate analyses that control for a set of variables related with future bankruptcy likelihood. Results are available upon request. Therefore, it appears that a Type II error is associated with higher levels of abnormal insider selling and that the negative association between insider sales and going-concern opinions is not merely a reflection of greater survival among firms with abnormally high insider sales. In addition, among clean firms, the levels of abnormal insider sales of firms that later filed for bankruptcy are both economically and statistically significantly higher than those of their counterparts—the survivors. We thank Professor Lynn M. LoPucki, UCLA School of Law, for providing us a detailed list of bankruptcy filings by listed companies.

[27] The SEC's recent charges against former Countrywide CEO Angelo Mozilo are a warning to corporate executives that the immunity from insider trading liability provided by 10b5-1 trading plans is not unlimited.

VI. CONCLUSION

We investigate whether insider trading affects external auditors' decisions to issue first-time going-concern opinions. Specifically, we posit that insiders have incentives to discourage auditors from issuing going-concern opinions after abnormal insider sales because the bad news from a first-time going-concern opinion is likely to attract regulators' scrutiny and class action lawsuits against insider trading from investors.

Using a sample of 12,329 financially distressed firm-year observations over the period 2000 through 2007, we find evidence that abnormal insider sales are negatively associated with the likelihood of receiving a first-time going-concern opinion. A one standard deviation increase in the predicted change in insider sales is related to a decrease of 1.39 percent in the likelihood of a going-concern opinion. Cross-sectional analyses further indicate that the economic importance of clients strengthens this negative relation, while the effect is attenuated by auditors' litigation and reputation concerns and audit committee independence. We also observe that auditors who issue clean opinions are less likely to be replaced in the following year for firms with higher levels of insider selling activity. Last, we find that the inverse relation between insider selling and going-concern opinions is weaker after SOX. The overall negative effect of insider selling on going-concern opinions is robust to the use of an alternative matched sample and three alternative measures of insider trading, to controlling for possible endogeneity and earnings management, and to the application of various methods aiming to control for correlated omitted variables. Collectively, this study highlights the association between managerial trading activity and auditor behavior.

However, we acknowledge that this study provides no direct evidence that managers openly discourage auditors from issuing going-concern opinions when engaging in insider sales. In particular, our findings might reflect the trade-offs by auditors between their own costs of issuing clean-opinion reports for high bankruptcy risk firms and the litigation costs imposed on insiders when auditors issue going-concern reports. Alternatively, trading for liquidity reasons by corporate insiders might also explain our results. Finally, our two-step regression technique might limit our ability to detect insiders' opportunistic trading behavior.

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APPENDIX A
FIRST-STAGE REGRESSION

This appendix describes the first-stage model used to estimate *PREDICT_CHNSV*, reports the summary statistics for variables in the model, and presents the results of the estimation.

Panel A: First-Stage Regression Model

$$CHNSV_t = \alpha_0 + \alpha_1(OPTION\_GRANTS_{t-1}) + \alpha_2(RETURN_{t-1}) + \alpha_3(CHNSV_{t-1}) \\ + \alpha_4(\Delta MB_{t-1}) + \alpha_5(\Delta MV_{t-1}) + \alpha_6(\Delta ROE_{t-1}) + \varepsilon_t. \qquad (A1)$$

CHNSV = difference between the current year's net selling volume (*NSV*) and the average *NSV* during the prior four years, where *NSV* is measured as the natural logarithm of 1 plus the absolute total dollar amount of net insider trading (in thousands) over a fiscal year, with a positive (negative) sign added for net sales (net purchases). Net insider trading is insider purchases subtracted from insider sales;

OPTION_GRANTS = number of options granted, scaled by the number of outstanding shares. Following Cheng and Lo (2006), we use the resulting options held by insiders from the derivatives trading data in the insider trading database;

RETURN = firm's annual stock returns;

ΔMB = difference between the current year's market-to-book ratio and the average market-to-book ratio during prior years up to four, where the market-to-book ratio is measured as the market value of equity to the book value of equity. The market value of equity is the product of the year-end stock price and the number of outstanding common stocks (Compustat item PRCC_F ∗ CSHO). The book value is Compustat item CEQ;

ΔMV = difference between the current year's firm size and the average firm size during prior years up to four, where firm size is measured as the natural logarithm of the market value of equity defined above (Compustat item PRCC_F ∗ CSHO); and

ΔROE = difference between the current year's return on equity (ROE) and the average ROE during prior years up to four, where ROE is measured as the bottom line earnings scaled by the book value of equity (Compustat item NI/CEQ).

We estimate Equation (A1) using all firm-year observations in the intersection of the insider trading dataset and the Compustat database, rather than the financially distressed sample, to increase the precision of estimating the expected insider trading. Our results are robust to the use of the financially distressed sample in the first step of the regression. As in Cheng and Lo (2006), the estimation is performed annually over the sample period to mitigate the time effect (Fama and MacBeth 1973).

Panel B: Summary Statistics for Variables in the First-Stage Regression

Variable	n	Mean	Median	Std. Dev.	Q1	Q3
$OPTION\_GRANTS_{t-1}$	49,820	0.006	0.001	0.015	0.000	0.004
$RETURN_{t-1}$	49,820	0.065	0.054	0.843	−0.212	0.251
$CHNSV_{t-1}$	49,820	0.288	0.000	4.209	−1.722	5.922
MB_{t-1}	49,820	2.970	1.881	4.623	1.163	3.296
MV_{t-1}	49,820	5.798	5.724	2.143	4.121	7.221
ROE_{t-1}	49,820	−0.052	0.079	0.744	−0.053	0.147

Panel C: Results for the First-Stage Regression

Variables	Coeff. Estimate	t-value
Intercept	0.207	1.49
$OPTION\_GRANTS_{t-1}$	8.633***	4.55
$RETURN_{t-1}$	0.489***	3.75
$CHNSV_{t-1}$	0.195***	27.27
ΔMB_{t-1}	0.028**	3.02
ΔMV_{t-1}	0.285***	4.36
ΔROE_{t-1}	0.071**	3.05
Avg. Adj. R^2	0.161	
Observations	49,820	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively.

APPENDIX B

MOTIVATION FOR, AND EXPECTATIONS OF, THE EXPLANATORY VARIABLES IN THE GOING-CONCERN MODEL

The motivation for the choice of explanatory variables used in the going-concern model (Equation (1)) is based on prior studies regarding the determinants of going-concern opinions (e.g., Dopuch et al. 1987; Mutchler et al. 1997; Reynolds and Francis 2000; DeFond et al. 2002). *ZSCORE* is the Altman's Z-score, with higher values indicating a lower probability of bankruptcy. We also include *LOSS* (a dummy indicating a loss in the current year) because firms with losses are more likely to fail (Reynolds and Francis 2000). The natural logarithm of total assets (*SIZE*) is included because large firms have more negotiating power in the event of financial difficulties and, hence, are more likely to avoid bankruptcy (Reynolds and Francis 2000). The *AGE* variable is the natural logarithm of the number of years a company has been publicly traded. Younger firms are more prone to failure and, therefore, have a higher likelihood of receiving a going-concern report (Dopuch et al. 1987).

We also include two market-based measures following Dopuch et al. (1987): *RETURN*, which is the stock return over a fiscal year, and *VOLATILITY*, which is the standard deviation of the company's monthly stock returns. *RETURN* is expected to be negatively associated with *GC OPINION* and *VOLATILITY* to be positively associated with *GC OPINION*. Other determining factors in our model include leverage (*LEV*) and change in leverage (*CLEV*), because Mutchler et al. (1997) find that debt covenant violations are positively associated with the probability of a going-concern opinion being issued. We include *LEV* to capture proximity to covenant violation as firms close to violation are likely to have high leverage (Beneish and Press 1993), and we include *CLEV* because increases in leverage are likely to move firms closer to covenant violation (Reynolds and Francis 2000). *OCF* (operating cash flows divided by total assets) is included because poor operating cash flows are often associated with the probability of bankruptcy and because the Altman's Z-score does not include a cash-flow measure. In addition, we include *ANNLAG* (the number of days between the fiscal year-end and the earnings announcement date) because prior research finds that going-concern opinions are associated with longer reporting delays (Raghunandan and Rama 1995; Carcello et al. 1995).

In addition, several factors are included that are likely to reduce the probability of receiving a going-concern opinion. *INVESTMENTS* is the sum of a firm's cash and investment securities (short- and long-term), scaled by total assets. Firms with large cash and investment securities have a greater ability of avoiding bankruptcy in the event of financial difficulty (Berger et al. 1996). *NEWFINANCE* captures new financing activities, mainly the new issuance of debt or equity securities (public or private) over the succeeding fiscal year. Mutchler et al. (1997) find that new financing reduces the probability of bankruptcy. The information about new financing activities is based on the reported numbers in the statement of cash flows (Compustat item DLTIS and SSTK). Specifically, it takes the value of 1 if a firm has cash flows from the issuance of debts (i.e., DLTIS > 0) or the proceeds from the issuance of equity securities are over 5 percent of the firm's market value of equity (i.e., SSTK > 5 percent of the firm's market value). We follow Richardson et al. (2004) and require proceeds from equity issuance to be greater than 5 percent of the market value of equity for that year to filter out employees' exercise of stock options. We also include *BIGN,* an indicator variable equal to 1 if the auditor is a member of the Big N auditing firms, and 0 otherwise. This variable is included because prior research argues that Big N auditors are more likely to issue going-concern audit opinions (Mutchler et al. 1997).

APPENDIX C
DEFINITION OF VARIABLES

Variables in the Model of Going-Concern Opinions

GC OPINION = indicator equal to 1 if the firm receives a first-time going-concern opinion, and 0 otherwise;

PREDICT_CHNSV = predicted value of the change in net insider selling volume (*CHNSV*) based on the model of insider trades in Appendix A;

CHNSV = difference between the current year's net selling volume (*NSV*) and the average *NSV* during the prior four years, where *NSV* is measured as the natural logarithm of 1 plus the absolute total dollar amount of net insider trading (in thousands) over a fiscal year, with a positive (negative) sign added for net sales (net purchases). Net insider trading is insider purchases subtracted from insider sales;

ZSCORE = Altman's (1968) Z-score;

LOSS = indicator equal to 1 if the client's net income (Compustat item NI) is negative for the current year, and 0 otherwise;

SIZE = natural logarithm of total assets (Compustat item AT);

AGE = natural logarithm of the number of years of data for the client firm since the coverage in Compustat;

RETURN = firm's cumulative stock return over the current year;

VOLATILITY = standard deviation of monthly stock returns over the current year;

LEV = ratio of total liabilities (Compustat item LT) to total assets at the end of the current year;

CLEV = change in *LEV* from previous year to current year;

OCF = operating cash flow (Compustat item OANCF) scaled by total assets for the current year;

ANNLAG = number of days between the fiscal year-end and earnings announcement date for the current year;

INVESTMENT = short- and long-term investment securities (including cash and cash equivalents) (Compustat items CHE and IVPT), scaled by total assets;

NEWFINANCE = indicator variable equal to 1 if the client has a new issuance of equity or debt over the subsequent fiscal year (i.e., nonzero Compustat item DLTIS or the amount of Compustat item SSTK is over 5 percent of the firm's market value of equity), and 0 otherwise; and

BIGN = indicator equal to 1 if the auditor is a member of the Big 5 before 2002 or a member of the Big 4 after 2002, and 0 otherwise.

Variables in the Models of Cross-Sectional Tests

DEPENDENCE = ratio of a specific client's audit fee (market value) to the total audit fees (total market values) for all clients of an incumbent auditor at the local office, where the fees and clients' market values are in natural logarithms;

FRAUD = 1 for clients if any of the local auditor office's clients announced a financial fraud in the recent two years, and 0 otherwise;

EXPERT = 1 if the incumbent auditor ranks as a top two firm in the client's industry (two-digit SIC code) in terms of market share of sales, and 0 otherwise;

OFFICESIZE = natural logarithm of the total audit fees of a local practice office in a given fiscal year; and

INDEP = 1 if the firm has a fully independent audit committee (i.e., all the audit committee members are independent), and 0 otherwise.