

Do Voluntary Disclosures that Disavow the Reliability of Mandated Fair Value Information Reflect Legitimate Concerns About Reliability?

Walter G. Blacconiere
Kelley School of Business
Indiana University

James R. Frederickson
Melbourne Business School
The University of Melbourne

Marilyn F. Johnson
Eli Broad College of Business
Michigan State University

Melissa F. Lewis
David Eccles School of Business
University of Utah

November, 2008

Comments welcome. Please do not quote without permission.

We thank Brian Cadman, Asher Curtis, Sarah McVay, workshop participants at the University of Wisconsin, and brown bag participants at the University of Utah for providing insightful suggestions to improve the paper. We also thank Susan McMahan for research assistance and Daniel Collins, Guojin Gong and Haidan Li for use of their backdating data. Finally, we thank our colleagues who offered helpful suggestions on an earlier version of the paper titled “Voluntary Disclosures That Disavow Mandatory Disclosures: The Case of Stock Options”.

Do Voluntary Disclosures that Disavow the Reliability of Mandated Fair Value Information Reflect Legitimate Concerns About Reliability?

Abstract

U.S. and international accounting standards have mandated recognition and/or disclosure of fair value information for an increasing number of items. One consequence of this shift has been the emergence of voluntary disclosures in audited financial statements that explicitly question the reliability of the mandated fair value information. We investigate whether these voluntary disclosures reflect legitimate concerns by examining whether the mandated fair value information is less reliable for firms that include such disclosures in the footnotes of their financial statements. We examine this issue in the context of the fair value estimate of employee stock options mandated by SFAS 123. After controlling for other motivations to disavow (e.g., opportunism related to compensation issues), we find that a firm is more likely to make a disavowal disclosure when inputs to its stock-option valuation model are less reliable. We find little evidence that stock option disavowals are motivated by managers' desires to hide abnormally high compensation or downplay the detrimental impact of option expense on performance metrics. Surprisingly, we find that disavowals are most common when Ernst and Young audited the financial statements. This result is interesting as it suggests that firms' disclosure policies are impacted by both firm-specific costs and benefits of disclosure and the opinions of third parties (which presumably increase the perceived benefits of the disclosure). In future analyses, we plan to investigate Ernst and Young's comment letters to the FASB regarding SFAS 123 and 123R to better understand Ernst and Young's objections to stock option expensing.

Keywords: Fair value; disclosure; reliability; stock options

I. Introduction

U.S. and international accounting standards mandate recognition and/or disclosure of fair value information for an increasing number of items.¹ One consequence of this shift is the emergence of voluntary disclosures in audited financial statements that explicitly question the reliability of the mandated fair value information. Examples include banks questioning the reliability of their loan and deposit fair values mandated under SFAS 107 (Nelson 1996) and firms questioning the reliability of the fair value estimates for employee stock option compensation (SOC) mandated under SFAS 123 (Frederickson et al. 2006).² We hereafter refer to such disclosures as disavowals.

Reliability is a primary qualitative characteristic that accounting information should possess (SFAC No. 2), and impacts the weight that financial statement users place on accounting information (Cotter and Zimmer 2003). Frederickson et al. (2006) report that disavowals of the reliability of mandated fair value information can cause financial statement users to place less weight on the fair value information, consistent with financial statement users acting as if disavowals reflect legitimate concerns by management about the reliability of the disavowed fair value information.

In this paper, we address whether disavowals of the reliability of mandated fair value information do, in fact, reflect legitimate concerns about the reliability of the fair value information. Specifically, we examine whether mandated fair value information is less reliable for firms that disavow the reliability of the fair value estimate.

¹ See, for example, Statement of Financial Accounting Standards (SFAS) 121, 123, 123R, 133, 142, and 144.

² Other examples of fair value disavowals include: (1) retained interests sensitivity analysis under SFAS 140; (2) value-at-risk disclosures under Financial Reporting Release 48; (3) fair value disclosures relating to uncertainties and estimates under Statement of Position 94-6; and (4) mutual fund estimates relating to restricted securities.

To address this issue, we focus on one specific disavowal: the disavowal of the fair value estimate of employee SOC mandated under SFAS 123. We focus on this disavowal for two reasons. First, the reliability of the fair value estimate of SOC was a hotly contested issue in the development of SFAS 123 and SFAS 123R, suggesting not only that many people believe the SOC estimate is unreliable (see, e.g., SFAS 123, Appendix A, Paragraph 59; Bates 1996; Hassett and Wallison 2003; Calomiris and Hubbard 2004), but also that there may be cross-sectional variation in the reliability of the SOC estimate. Second, a substantial number of firms have explicitly disavowed the reliability of their SOC estimate since implementation of SFAS 123 in 1996 (Frederickson et al. 2006), providing a sufficient amount of data to facilitate reliable tests.

We hand collect disavowal data from 10-K reports for the population of Execucomp firms in the year they adopted SFAS 123 (fiscal 1996 for most firms), as well as for each fiscal year from 2001 through 2005. Approximately 6.5% of our sample firms disavow in the SFAS 123 adoption year, increasing to approximately 15% in each year from fiscal 2001 to fiscal 2003. The percentage of disavowal firms declines to 8.4% by fiscal 2005, the year before SFAS 123R was implemented. In addition, 2.5% to 5.1% of our sample firms either initiate a disavowal disclosure or discontinue an existing disavowal disclosure in each year from fiscal 2002 to fiscal 2005, indicating that firms periodically revisit their disavowal decisions.

To investigate whether the reliability of the SOC estimate is a determinant of SOC disavowals, we estimate (1) a levels specification for the SFAS 123 adoption year, (2) a levels specification for each fiscal year from 2001 through 2005, and (3) a changes specification for fiscal years 2002 through 2005. Consistent with explicit statements in most SOC disavowals that reliability problems are due to subjectivity of the inputs into the firm's option pricing model, our measures of reliability focus on the pricing model inputs, in particular the estimate of stock

return volatility over the expected life of the options. We focus on the future volatility estimate because many SOC disavowal disclosures explicitly mention stock return volatility, and, of the various inputs, it is a particularly critical input. Not only are option values sensitive to errors in estimating volatility (Black 1989), but future volatility also is the most difficult input to accurately forecast (Alford and Boatsman 1995). We use three different approaches to measure potential reliability problems with the volatility input estimate: (1) an indicator variable for firms that do not have sufficient historical volatility data, due to short trading histories, to estimate future volatility, (2) the standard deviation of historical volatility over various time frames prior to the fair value estimate date, and (3) an indicator variable for firms that do not have long-term, traded options. We also include proxies for other incentives to disavow the SOC estimate (e.g., opportunism related to compensation), as well as a variety of other control variables.

Our results indicate that firms for which it should be more difficult to accurately estimate future stock return volatility are more likely to disavow. Specifically, firms are more likely to disavow if they have a short trading history while firms that experience an increase in volatility in the 12 months prior to the volatility estimation date are more likely to initiate a disavowal disclosure. According to SFAS 123, the estimate of expected future volatility generally should be based on historical returns data for a period of time that approximates the expected life of the options. Firms with short trading histories (e.g., less than three years) do not have historical returns data for a period of time that approximates the expected option life. These firms therefore will need to make subjective adjustments to their historical volatility and/or use alternative estimation approaches when estimating expected future volatility. Similarly, when there has been an increase in volatility, firms would need to make subjective adjustments to their historical volatility when estimating expected future volatility. Not only would the subjective

adjustments reduce the verifiability of the SOC estimate, but they also would increase the error in the SOC estimate. Increased error reduces the correspondence between the measure and the economic phenomenon, reducing representational faithfulness.

With respect to managers using disavowals opportunistically, we find no evidence that firms are more likely to disavow when the pay of the top five executives is abnormally high relative to industry counterparts, or when SOC expense would, if it had been recognized, have had a more detrimental effect on return on assets or earnings per share. We do find, however, that a firm is more likely to disavow in the year it adopted SFAS 123 if its top five executives receive a higher proportion of their pay in the form of option compensation, although this result does not hold throughout our sample period.

Surprisingly, the strongest predictor of SOC disavowals is having Ernst and Young as an auditor. Clients of Ernst and Young are more than 11 times more likely to disavow than are the clients of other national audit firms. Results from additional analyses are inconsistent with Ernst and Young acting opportunistically on behalf of its clients or with opportunistic clients selecting Ernst and Young as their auditor.³ Interestingly, we find that Ernst and Whinney, one of the predecessor firms of Ernst and Young, was the only one of the then Big 8 audit firms to lobby to the FASB against the fair value approach for SOC in SFAS 123. In future analyses, we will examine accounting firms' comment letters to the FASB about SFAS 123 and 123R to determine whether Ernst and Young expressed concern over the reliability of the option pricing models.

Our study contributes to the literature in at least three ways. First, we provide evidence about the determinants of a voluntary disclosure that has emerged in response to the FASB mandating recognition and/or disclosure of fair value information. Unlike the general caveats

that firms provide about estimates and assumptions used in their financial statements,⁴ these new disclosures are statements in the audited footnotes that explicitly disavow the reliability of specific, mandated, fair value information. Because voluntary disavowals can affect the degree to which financial statement users incorporate the disavowed information into their judgments and decisions (Frederickson et al. 2006), it is important to understand whether the disavowals reflect legitimate reliability concerns, as well as to understand other factors that motivate the disavowals. Our results are consistent with disavowals communicating legitimate concerns about the reliability of the disavowed fair value information.

Second, we contribute to research on the reliability of accounting information. A major conclusion of studies in this area is that concerns about the reliability of accounting information arise from an interaction between accounting standards and the incentives facing preparers (Maines and Wahlen 2006). Our result for Ernst and Young suggests that the global beliefs of a third party partner also can affect firms' disclosure decisions. To the best of our knowledge, we are the first to document this effect.

Third, although not a primary focus of the study, our stock option context allows us to extend research regarding firms' reactions to SFAS 123. Prior work has investigated firms' lobbying behavior on SFAS 123 (Dechow et al. 1996; Hill et al. 2002), and whether firms manage SOC expense under SFAS 123 (Aboody et al. 2003; Balsam et al. 2003; Hodder et al.

³ For example, we find that changes in abnormal compensation, changes in the proportion of the CEO's compensation granted in the form of stock options, and changes in the impact of SOC on return on assets are not related to switches from other accounting firms to Ernst and Young.

⁴ As an example of the general caveats, a footnote in Wal-Mart's 2001 financial statements states, "The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities. They also affect the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reported period. Actual results may differ from these estimates."

2006). We extend this literature by showing another important response by managers in dealing with the controversial passage of SFAS 123: disavowal disclosures.

The remainder of the paper is organized as follows. We provide background information about stock option accounting and disavowal disclosures in Section II and develop our hypothesis in Section III. Section IV presents the research design, including discussion of the sample, model, and variables. Section V presents the results of our empirical analyses, and we conclude the paper in section VI.

II. STOCK OPTION ACCOUNTING AND DISAVOWAL DISCLOSURES

SFAS 123 governed the accounting treatment for employee stock options during our sample period. In response to intense lobbying, SFAS 123 gives firms two options: (1) the recommended fair value approach or (2) the intrinsic method (as specified in APB Opinion No. 25) with fair value disclosures. With the first option, firms first determine a point estimate of the fair value of employee stock options on their grant date and then determine the annual expense for the options by amortizing their estimated fair value over their service period, which is typically the vesting period.⁵ Firms recognize the estimated SOC expense as a determinant of reported earnings on their income statements. With the second option, the amount firms recognize on their income statements for SOC expense equals the excess on the measurement date of the market value of the firm's shares over the option exercise price; this amount is typically zero. However, SFAS 123 requires firms that choose the intrinsic method to provide in their notes a pro forma disclosure of the fair value approach. Specifically, SFAS 123 requires these firms to disclose pro forma earnings that incorporate the fair value SOC expense.

⁵ SFAS 123 does not dictate a specific option-pricing model. However, based on a search of the EDGAR database, Hodder et al. (2006) find that only eight firms did not use the Black-Scholes model to estimate SOC for 2002.

Although SFAS 123 encourages the fair value approach, the vast majority of firms elected the second option. However, in the wake of political and public attention on accounting standards and practices (in particular, stock option accounting) following the accounting scandals at Enron, WorldCom and other firms, a substantial number of firms changed accounting treatments and voluntarily chose the fair value approach (Aboody et al. 2004).

In response to the requirement in SFAS 123 to generate and disclose a point estimate of the fair value of SOC, some firms included a statement in their stock option footnote that questions the reliability of the fair value SOC estimate. The following excerpt from the stock option footnote in Intel's fiscal 2001 annual report illustrates a typical explicit stock option disavowal.

The Black-Scholes option valuation model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions, including the expected stock price volatility. Because the company's employee stock options have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in the opinion of management, the existing models do not necessarily provide a reliable single measure of the fair value of employee stock options.

For each sample firm, we hand collect the stock option footnote for the year it adopted SFAS 123, as well as for fiscal years 2001 through 2005.⁶ We classify a firm as having a disavowal disclosure if the firm includes a statement in the footnote that explicitly questions the reliability of the SOC estimate and/or the resulting pro forma income. Consistent with Intel's disavowal, nearly 90% of the firms that explicitly question the reliability of the SOC estimate also (1) question the appropriateness of using the Black-Scholes option pricing model to value employee stock options and (2) state concerns about the subjectivity of the model inputs.⁷

⁶ We explain both our sample selection process and our sample years in Section IV.

⁷ Some firms include a statement in their stock option footnote that questions the appropriateness of using the Black-Scholes option pricing model and/or comments about the subjectivity of the option pricing inputs, but do

Panel A of Table 1 reports the number and percentage of disavowal firms in each sample year. Approximately 6.5% of our sample firms disavow the SOC estimate in the SFAS 123 adoption year, increasing to approximately 15% for fiscal years 2001 through 2003. The percentage decreases to 8.4% by fiscal 2005, which is the year before SFAS 123R is implemented. Panel B reports the percentage of firms that either initiated or discontinued a disavowal disclosure in each year from fiscal 2002 through fiscal 2005. Approximately 2.5% to 5.1% of our sample firms change their disavowal status each year from fiscal 2002 through fiscal 2005. We gain two insights from Table 1. First, a substantial number of firms made disavowal disclosures under SFAS 123. Second, the change in disavowal status over time suggests that firms periodically revisit the disavowal decision.

[Insert Table 1 here.]

III. HYPOTHESIS DEVELOPMENT

SOC disavowal disclosures (such as Intel's) raise the issue of whether the disavowals reflect legitimate concerns by management about the reliability of the fair value SOC estimate. To the extent they do, one would expect the reliability of the SOC fair-value estimate to be lower for firms that disavow. This expectation is predicated on three issues: (1) the reliability concerns stated in the disavowal disclosures are potentially valid and the applicability of the concerns potentially differs across firms, (2) there are benefits to making the disavowal disclosure and (3) there are costs to making the disavowal disclosure. We discuss each issue below.

Potential Validity of Reliability Concerns

A necessary condition for a disavowal to reflect legitimate concerns about the reliability of the disavowed fair value information is that the reliability concerns stated in the disavowal are

not explicitly question the reliability of the SOC estimate. Due to the lack of an explicit statement about reliability, we do not classify these firms as having a disavowal disclosure.

potentially valid. According to the FASB's Statement of Financial Accounting Concepts (SFAC) No. 2, an accounting measure is reliable to the extent that it is both (1) verifiable and (2) representationally faithful. An accounting measure is verifiable to the extent there is a high degree of consensus among independent measurers about the magnitude of the measure while an accounting measure is representationally faithful to the extent there is a high degree of correspondence between the measure and the economic transactions, events, or circumstances that it represents. Thus, an accounting measure is reliable if it is both reasonably free from error or bias and faithfully represents what it purports to represent.

SOC disavowals generally mention two reliability concerns. The first is that option-pricing models designed for valuing exchange-traded options, such as the Black-Scholes model, are not valid for pricing employee stock options because they differ in significant ways from exchange-traded options.⁸ Implicit in this concern is that the differences between the two types of options cause pricing models for exchange-traded options to systematically overvalue employee stock options. For example, in a January 31, 2003 letter to the FASB, the Business Roundtable argued that pricing models for exchange-traded options systematically overvalue employee stock options because the models do not recognize provisions common in employee options that serve to reduce the value of employee stock options relative to exchange-traded options.

As discussed by both the FASB (in SFAC No. 2) and the Financial Accounting Standards Advisory Council (2004), an accounting measure from a biased measurement method generally is not representationally faithful, and thus generally is not reliable. Although SFAS 123 discusses the measurement bias issue that arises from using pricing models for exchange-traded options to

⁸ These differences include (1) non-exercisability before vesting; (2) truncated term if employment terminates after vesting but before exercise; (3) inability of employees to hedge their option position or use their options as collateral; (4) ordinary income taxation of gains at exercise; and (5) other provisions applicable to some option

value employee stock options, the adjustments discussed in SFAS 123 are somewhat subjective and may not address all value-relevant differences between the two types of options. This issue is further complicated by the fact that there are a variety of option pricing models, but there is no consensus among financial economists as to which pricing model provides the most reliable fair value estimate for SOC (Hassett and Wallison 2003; Calomiris and Hubbard 2004).

The second reliability concern that the typical SOC disavowal mentions is that option pricing models require firms to estimate a number of highly subjective inputs, and the SOC estimate generated by the option pricing model is highly sensitive to the magnitude of the inputs. The inputs for an option-pricing model are predictions of future outcomes, and SFAS 123 indicates that firms generally should estimate the inputs using historical data. However, SFAS 123 also indicates that firms should adjust the historical estimates if past experience is not a reasonable predictor of the future. A firm's decision about whether an adjustment to historical measures is needed will be relatively subjective, as will the direction and magnitude of any adjustments the firm deems necessary. The subjective nature of this adjustment process arguably reduces the likelihood of consensus among independent measurers about the appropriate magnitude of the inputs, which implies that the verifiability of the inputs—and thus the reliability of the resulting SOC fair-value estimate—can differ across firms.

In addition, errors in estimating the option pricing model inputs are problematic because even small estimation errors can have a significant effect on the magnitude of the SOC estimate (Hodder et al. 2006). To illustrate the effect of input estimation errors, consider the 282 million employee stock options that Cisco Systems granted in fiscal 2002 (refer to Appendix A for additional details on our calculations). Based on Cisco Systems' input assumptions, these 282

grants (e.g., black-out periods, holding periods, ownership requirements, non-compete provisions and 'claw-back' provisions).

million options have a Black-Scholes fair value of \$2,384 million. For *each* percentage point that Cisco Systems underestimates its stock return, the Black-Scholes fair value estimate of these 282 million employee stock options is reduced by 1.4%, or \$33 million. Assuming a four-year service period, *each* one percentage point estimation error in stock return volatility would reduce Cisco Systems' fiscal 2002 SOC expense by \$8.25 million, which is equal to 0.4% of its reported fiscal 2002 net income. A five percentage point error in the estimated volatility would result in a \$166 million dollar SOC error (\$41.5 million and 2.2% of net income per service year). Clearly, small estimation errors in option model inputs can have a large and economically significant effect on SOC expense and pro forma net income.

Benefit of Stock Option Disavowal

SFAS 123 requires firms to provide a point estimate of SOC, as well as weighted-average point estimates of the inputs into their option-pricing model. However, “[r]eporting accounting numbers as certain and precise if they are not is a negation of reliable reporting” (SFAC No 2, paragraph 72). Thus, for firms that have legitimate concerns about the reliability of their SOC estimate, the use of point estimates masks the uncertainty and/or lack of precision—due to a lack of verifiability and/or lack of representational faithfulness—implicit in the SOC estimate. Because SOC expense is value relevant (Aboody et al. 2004), firms that have legitimate concerns about the reliability of their SOC estimate have incentives to communicate information to financial statement users that will enhance their understanding of the reliability of the SOC estimate, and thus help them evaluate and weight SOC expense appropriately. This perspective is consistent with the FASB’s claim in SFAS 157 (paragraph C113) that qualitative disclosures about fair value measurement improve the quality of information provided to stakeholders, and thus enhances their understanding about the fair value estimates. Specifically, the disavowal

signals greater uncertainty about the accuracy of the option pricing inputs—and by extension the accuracy of the SOC estimate, which, in turn, should cause financial statement users to place less weight on the SOC estimate (Kim and Verricchia 1991; Baginski et al. 1993). Thus, the primary benefit of the disavowal disclosure is a more appropriate weighting of the SOC estimate.

Cost of Stock Option Disavowal

There are at least two costs of making the disavowal disclosure. The first is that a disavowal disclosure may adversely affect perceptions of management competence. Managers who disavow are implicitly stating that unlike the managers who do not disavow, they lack the knowledge and/or ability to generate reliable estimates of SOC. Financial statement users, therefore, may interpret a disavowal as a negative signal about management's competence.

The second cost is an increased divergence in expectations of financial statement users about future firm performance. A disavowal disclosure signals that management believes its point estimate of SOC, as well as its point estimates of the option pricing inputs, is masking uncertainty about the magnitude of the inputs, and by extension the fair value of the SOC. Although the disavowal signals there is uncertainty in the SOC point estimate, it does not indicate the degree of uncertainty. A possible consequence is that financial statement users will have divergent perceptions about the degree of uncertainty, which in turn can increase divergence in their expectations about future performance (Holthausen and Verricchia 1990; Morse et al. 1991).

Hypothesis

The discussion above suggests that the conditions necessary for disavowals to reflect legitimate concerns about the reliability of the SOC fair-value estimate hold. Not only are the two reliability concerns typically stated in a SOC disavowal potentially valid, but the extent of

the reliability problems (in particular the problems due to subjectivity in the input assumptions) also are likely to vary across firms, creating cross-sectional variation in the reliability of the SOC estimate. In addition, the cost-benefit trade-off of making a disavowal disclosure is likely negative for firms that can reliably estimate SOC. Disavowals may therefore reflect legitimate concerns, suggesting the following hypothesis.

H: The reliability of the fair-value SOC estimate is lower for firms that disavow its reliability.

IV. Research Methodology

To test our hypothesis, we use logistic regression to estimate both a levels and changes specification. We first discuss our sample, and then present the levels specification, followed by the changes specification.

Sample

Our initial sample consists of (1) all firms in the 1996 Execucomp database and (2) all firms in the 2001 Execucomp database.⁹ We then eliminate firms that do not use stock options to compensate employees, as well as firms without the requisite CRSP or Compustat data in our sample years. For each firm remaining from the 1996 Execucomp database, we hand collect the firm's stock option footnote for the year they adopted SFAS 123, which is fiscal year 1996 or 1997, depending on the firm. For each firm from the 2001 Execucomp database, we hand collect the stock option footnote for fiscal years 2001 through 2005. We classify a firm as having a disavowal disclosure if the firm includes a statement in its stock option footnote that explicitly questions the reliability of the SOC estimate and/or the resulting pro forma income.¹⁰

⁹ The Execucomp database includes the majority of firms in the S&P 500, S&P 400 MidCap, and S&P 600 SmallCap indices.

¹⁰ Firms might disavow their SOC estimate in places other than their annual report (e.g., proxy statements, press releases). However, because our interest is on the voluntary disavowal of mandatory disclosures included in

We chose not to classify firms for fiscal years 1997 through 2000 because the classification process is labor intensive (due to the hand collection of firms' stock option footnotes) and we did not expect a substantial change in disavowal behavior for fiscal years 1997 through 2000. Specifically, the demand for transparent reporting, particularly with respect to stock options, was relatively constant until the accounting scandals involving Enron, WorldCom, and others erupted in 2000 and 2001, implying that firms had little incentive to change their disavowal strategy prior to 2000 or 2001. Consistent with this, we find that only 24, or less than 1.8%, of the firms that are in both the 1996 and 2001 Execucomp database changed their disavowal strategy over this entire five-year period.

Levels Specification

We use a logistic regression to estimate whether our reliability measures (discussed below) are significantly associated with the presence of a disavowal disclosure, after controlling for other potential determinants of SOC disavowals. We estimate the model (shown below) by year because over our sample period, not only did investor sentiment towards SOC accounting and transparent disclosures change due to the accounting scandals at Enron, WorldCom, and other firms (see, e.g., Aboody et al. 2004), but also the FASB deliberated on and issued SFAS 123R.

$$\begin{aligned}
 \text{DISREL}_i = & \alpha_0 + \alpha_1 \text{RELIABILITY}_i + \alpha_2 \text{OPPORTUNISM}_i + \alpha_3 \text{REPUTATION} \\
 & \text{COSTS}_i + \sum_{n=1}^5 \gamma_n \text{AUDITFIRM}_n + \sum_{n=1}^7 \kappa_n \text{IND}_n + \alpha_5 \text{SIZE}_i + \\
 & \alpha_6 \text{RET1YR}_i + \varepsilon_i
 \end{aligned} \tag{1}$$

Dependent Variable

As discussed above, we classify a firm as having a disavowal if it has a statement in its stock option footnote that explicitly questions the reliability of the SOC estimate and/or the

audited financial statements, we limit our search to the footnotes in annual reports. We do not expect that using only annual report footnotes will bias our results.

resulting pro forma income. The dependent variable, DISREL, is an indicator variable set equal to one for firms we classify as having a SOC disavowal, and zero otherwise.

Independent Variables

The independent variables include both our measures for the reliability of the SOC estimate, and a variety of control variables. Below we discuss our reliability measures and the various control variables.

Reliability measures. RELIABILITY reflects our various reliability measures. Consistent with the discussion in Section III regarding the subjectivity of option pricing inputs, our reliability measures focus on the reliability of the inputs, and in particular on the input for the expected stock return volatility over the expected life of the option. We focus on this input for two reasons. First, of the various inputs, the estimate of stock return volatility is a particularly critical input because not only are option values quite sensitive to errors in estimating this volatility (Black 1989), but future stock return volatility is also the most difficult input to accurately forecast (Alford and Boatsman 1995). Second, many firms that mention the subjectivity of option pricing inputs in their disavowal, explicitly mention stock return volatility, consistent with the earlier example of Intel's disavowal.

Paragraphs 284 and 285 of SFAS 123 suggest that to estimate expected future volatility, a firm should first measure the historical volatility of its stock over a period that approximates the expected life of the options being valued and then adjust the historical volatility for factors indicating that historical volatility is not a reasonable indicator of expected future volatility. Our reliability measures reflect three situations where it should be more difficult for a firm to generate an accurate point estimate of expected future volatility. The first situation is where a firm's expected option life is longer than the time the firm's shares have publicly traded. In such

situations, the firm's insufficient trading history will necessitate subjective adjustments to the measure of historical volatility, leading to (1) less verifiable volatility estimates (via reduced consensus among independent measurers) and (2) reduced representational faithfulness (via increased measurement error).¹¹ According to Hodder et al. (2006) most firms during our sample period report an average option life of four years, suggesting that firms generally need four years of historical data to estimate future volatility. Consistent with this, we measure an insufficient trading history as $TYEARS < 3$, which is an indicator variable set equal to one if the firm's shares have traded publicly for three years or less, and zero otherwise. We expect the sign on this variable to be positive.

The second situation is where the volatility of the historical volatility is high. When the historical volatility is itself volatile, not only will it presumably be more difficult to make an accurate point estimate of the level of future volatility, but the pricing assumption of constant future volatility is also likely to be violated. We measure the volatility of historical volatility over three different time periods: the five-year period prior to the sample year (STDVOL-60M), the three-year period (STDVOL-36M), and the one-year period (STDVOL-12M); we expect the sign on the volatility of volatility measures to be positive. We calculate these variables as follows.

- STDVOL-60M (STDVOL-36M) equals the standard deviation of the estimated historical volatility based on CRSP monthly stock returns for the five (three) year period preceding the disavowal year. Specifically, we first estimate the volatility for each individual year by calculating the standard deviation of monthly returns for the year. We then compute the standard deviation of the annual volatility measures over the five years (three years) preceding the disavowal year.
- STDVOL-12M equals the standard deviation of monthly volatility for the year preceding the disavowal year. We estimate monthly volatility from CRSP daily stock returns.

¹¹ A short trading history may also capture the lack of reliability in other pricing model inputs. For example, recently public firms may have difficulty estimating dividend yields and the expected life of options.

The third situation is where a firm does not have long-term, traded options. Firms that have such options can observe the market's implied future volatility for the long-term options, which provides reliable information about what the market expects the firm's future volatility to be. Firms that do not have long-term, traded options do not have this market-based information. We define this measure as NO_LTOPT, which is an indicator variable set equal to one if the firm does not have any stock options that (1) trade on a major stock option exchange and (2) have expiration dates of at least 365 days from the beginning of the current fiscal year, and zero otherwise. We expect the sign on this variable to be positive.

Opportunism control variables. Our hypothesis is predicated on firms using disavowals, at least partially, to truthfully communicate private information to financial statement users that the SOC estimate is unreliable. However, firms may also use disavowals opportunistically, in situations where they have incentives to downplay the magnitude of the SOC expense. One such situation is where public scrutiny of the firm's compensation practices is expected to be high and potentially negative. Firms perceived as paying excessive compensation are more likely to attract the attention of stakeholders who can impose costs on the firm and its executives. Murphy (1996) argues that managers incur significant non-pecuniary costs from high reported levels of compensation and, therefore, have incentives to make financial reporting decisions that reduce reported executive compensation expense. Consistent with this, Baker (1999) finds that political costs arising from compensation policies affect reporting of option related disclosures. Accordingly, we include several compensation-related control variables in our regression; the variables control for (1) the relative importance of SOC in the compensation of the firm's top five executives (SOC_PCT), (2) the magnitude of abnormal total compensation paid to the top

five executives (XSCOMP), and (3) the proportion of SOC given to the top five executives relative to all employees (TOP5SO_PCT).¹² We measure these three variables as follows.

- SOC_PCT is the ratio of SOC granted to the firm's top five executives (sum of Execucomp item OPTION_AWARDS_BLK_VALUE) to the total compensation paid to the top five executives (sum of Execucomp item TDC1).
- XSCOMP is the excess of actual total compensation paid to the top five executives over expected total compensation.¹³ Similar to Murphy (1996) and Aboody et al. (2003), we first estimate an expected compensation model using prior year's data for all firms on Execucomp by Fama and French (1997) industry and then use the industry-specific, annual parameters to calculate expected total compensation in the year following the parameter estimation.¹⁴
- TOP5SO_PCT is the ratio of SOC granted to the top five executives (sum of Execucomp item OPTION_AWARDS_BLK_VALUE) to the firm's total SOC (implied SOC expense).

Prior research suggests that managers make accounting decisions to reduce the capital market cost of missing benchmarks (e.g., Burgstahler and Dichev 1997; DeGeorge et al. 1999; Burgstahler and Eames 2006) and/or reduce contracting costs (e.g., Healy 1985; DeFond and Jiambalvo 1994; Holthausen et al. 1995). To the extent that SOC expense disclosed in a firm's footnotes is relevant for earnings benchmarks and/or contracts, capital market and/or contracting costs are increasing in SOC expense and can provide incentives for firms to use the disavowal opportunistically to downplay SOC expense. Accordingly, we include variables in our regression to control for the effect of the magnitude of SOC expense on performance metrics.

¹² If data for the five top executives are not available, we calculate SOC_PCT, XSCOMP, and TOP5SO_PCT for just the CEO and assume the amounts for the CEO are representative for the top five executives.

¹³ Although SOC compensation would seem most closely linked to the SOC disavowal decision, all executives who are perceived to be "overpaid" are likely to be concerned about public scrutiny regarding compensation, regardless of the form their compensation takes. Accordingly, in considering excess compensation, we focus on total compensation rather than on just SOC compensation.

¹⁴ Specifically, we estimate the following compensation model:

$$\text{LN}(\text{TOTAL_COMP})_i = \gamma_0 + \gamma_1 \text{ASSETS}_i + \gamma_2 \text{LN}(\text{SALES})_i + \gamma_3 \text{GROWTH}_i + \gamma_4 \text{BM}_i + \gamma_5 \text{ROA}_i + \gamma_6 \text{RET}_i + \gamma_7 \text{VOL}_i + \varepsilon_i$$

where TOTAL_COMP is total compensation paid to the CEO and next four highest paid executives in thousands of dollars (Execucomp item TDC1). ASSETS and SALES are the firm's assets and sales, respectively. BM is the ratio of the book value of equity to the market value of equity. GROWTH is sales growth compared

These variables measure the decrease that would have resulted in the following items had the firm recognized SOC expense, rather than just disclose it in its footnotes: (1) the firm's return on assets (ROA_DIFF) and (2) the firm's earnings per share (EPS_DIFF).

Reputation costs control variables. New CEOs are likely to incur higher reputation costs than seasoned CEOs for disclosing their inability to reliably measure SOC. We therefore include as a control variable an indicator variable (NEW_CEO) set equal to one if the CEO's tenure began during the current year, and zero otherwise. We also expect the stakeholders of firms operating in industries that are heavy option users to generally be more sympathetic to the idea that SOC is unreliable, implying a lower reputation cost for these firms to disavow. For example, many of the employees of high tech firms wrote letters to the FASB discouraging expensing of SOC based, in part, on the argument that the estimate is unreliable (see comment letters relating to SFAS 123 and 123R). We therefore include as a control variable an indicator variable (OPTION_IND) set equal to one if the firm operates in a Fama and French industry that is in the top 20% of SOCE/ASSETS in fiscal 1996, and zero otherwise.

Affiliation control variables. We consider the possibility that the decision to disavow may be associated with affiliations the firm has, and thus control for certain affiliations. Auditors may be more concerned about the appropriateness of information recognized in the financial statements than disclosed in the footnotes (Libby et al. 2006), but they are, nonetheless, responsible for auditing the footnote in which firms disclose their disavowals. It is possible that beliefs about the reliability of the SOC estimate or about the appropriateness of disavowal disclosures in general may differ across auditors, resulting in differences across auditors in the likelihood of allowing firms to disavow. We therefore include a control variable for the firm's

to the prior year. RET is the stock return (including reinvestment of dividends) for the year (Execucomp item TRS1YR). VOL is the firm's 60-month volatility as reported by Execucomp.

auditor (AUDIT_FIRM). We classify audit firms as Big 5 or non-Big 5 and include a dummy variable for each Big 5 auditor, set equal to one if that auditor audits the firm, and zero otherwise. Similarly, certain industries may be more likely to disavow, so we include a set of dummy variables (IND) set equal to one for each one-digit SIC code.

Other control variables. We also control for two additional items. The first is the firm's information environment, and the second is the firm's market performance. We use the firm's size (SIZE), measured as the log of the firm's assets, to proxy for its information environment. For the latter, we use the firm's one-year stock return (RET1YR).

Changes Specification

We use the logistic regression in Equation (2) to estimate whether changes in our reliability measures are associated with the change in a firm's disavowal disclosure practice, after controlling for changes in other potential determinants of SOC disavowals. Firms can change their disavowal practices either by initiating a disavowal or by discontinuing a disavowal. We estimate separate models for each.

$$\begin{aligned} \text{DISREL_CHG}_i = & \beta_0 + \beta_1 \text{RELIABILITY_CHG}_i + \beta_2 \text{OPPORTUNISM_CHG}_i + \\ & \beta_3 \text{AUDIT_FIRM_CHG}_i + \beta_4 \text{EXP2002}_i + \beta_5 \text{EXP2003}_i + \\ & \beta_6 \text{EXP2004}_i + \varepsilon_i \end{aligned} \quad (2)$$

Dependent Variable

When we examine initiating behavior, DISREL_CHG_i is an indicator variable set equal to one if the firm disavowed in the current fiscal year but did not in the prior year, and zero otherwise. When we examine discontinuing behavior, DISREL_CHG_i is an indicator variable set equal to one if the firm did not disavow in the current fiscal year but did in the prior year, and zero otherwise.

Independent Variables

Most of the independent variables in Equation (2) mirror the independent variables in our levels specification, except they now reflect the change in the variable. We measure the change as the current year's value less the previous year's value. We also include as an independent variable EXP, which is an indicator variable for each year set equal to one if the firm switched during that year from the intrinsic method of accounting for employee stock options to the fair value approach, and zero otherwise.

V. RESULTS

Descriptive Statistics

Table 2 reports descriptive statistics for the adoption-year sample and for the fiscal 2001 sample, partitioned by firms that disavowed and firms that did not. For the adoption year, the means of the following firm characteristics are significantly lower for firms that disavowed than for firms that did not: assets, sales, operating income before depreciation, SOC expense (\$34.34 million versus \$527.87 million), and book-to-market ratio. None of the reliability measures differ significantly across firms. Of the opportunism control variables, the executives of disavowal firms received, relative to their non-disavowal counterparts, a larger proportion of their pay in the form of stock options (SOC_PCT = 0.37 versus 0.29) and a smaller proportion of the SOC compensation awarded to the firm's executive relative to rank and file employees (TOP5SO_PCT = 0.30 versus 0.50). In addition, the effect of SOC expense on the firm's ROA is smaller for firms that disavowed. Also, firms from all regions of the countries disavow their SOC estimate.

[Insert Table 2 here.]

In fiscal 2001, the three measures of the volatility of the historical return volatility are each significantly greater for firms that disavowed than for firms that did not, as is the effect of SOC expense on ROA and earnings per share. The only other variables significantly different across firms are operating income before depreciation, and the proportion of executive pay in the form of stock options.

Table 3 reports disavowal behavior, partitioned by Big 5 audit firm. Surprisingly, nearly 30% of the financial statements audited by Ernst and Young contained a disavowal of SOC, compared to only 6% of the financial statements audited by the other Big 5 audit firms.

[Insert Table 3 here.]

Empirical Results for Levels Specification

Table 4 reports the results from estimating equation (1) for each of our sample years, with the results for the various years reported across Panels A, B, and C. The likelihood ratio indicates that all specifications in each year are significant at the 1% level. The percent concordant ranges from 77% to 88%, indicating that the model does a good job of classifying firms.

[Insert Table 4 here.]

Results for SFAS 123 Adoption Year

Panel A of Table 4 reports the results for the adoption-year sample. The coefficient for the absence of long-term traded options (NO_LTOPT) is not significant, nor are the coefficients for the volatility of volatility measures (STDVOL_60M and STDVOL-12M).¹⁵ However, we find strong evidence that managers at firms with short trading histories are significantly more likely to disavow. The coefficient on TYEARS<3 is 0.92 ($p = 0.03$, one tailed) in specification (5) and 0.88 ($p = 0.035$, one tailed) in specification (6). To assess the robustness of this result, we create

¹⁵ The significance levels of STDVOL_60M and STDVOL_36M never differ across our sample years, so we do not tabulate results for the specification that uses STDVOL_36M as the measure of reliability.

two alternative short-trading history indicator variables. The first (second) is set equal to one if the firm's shares have traded for less than four (five) years prior to the estimation date. The coefficient (untabulated) on each alternative is positive and significant. Thus, firms with short trading histories are more likely to disavow the SOC estimate.

Turning to the opportunism control variables, the coefficient on SOC_PCT is positive and significant in all specifications, indicating that firms whose top executives receive a higher proportion of their pay in the form of stock options are more likely to disavow SOC estimates. Contrary to expectations, the coefficient on TOP5SO_PCT is negative and significant, indicating that firms that award a larger proportion of the firm's total SOC to its top executives (relative to all employees) are less likely to disavow. This result is inconsistent with TOP5SO_PCT measuring managements' concerns about reporting high levels of executive compensation. A possible explanation for this result is that firms are concerned about reporting high levels of stock option compensation for rank and file employees who may have little influence over firm performance.¹⁶ Finally, the abnormal compensation variable (XSCOMP) is not significantly different from zero in any specification, nor are ROA_DIFF and EPS_DIFF.¹⁷ These findings suggest that a firm's decision to disavow the SOC estimate is not motivated by either capital market costs, contracting costs, or a desire to diminish the perceived magnitude of abnormally

¹⁶ Murphy (2003) argues that granting of options to rank and file employees is not likely explained by attempts to resolve agency problems (because rank and file employees have little impact on stock price), but rather may be driven by low "perceived costs" of option grants relative to their true economic costs. The perceived costs of options are low, in part, over our sample period because firm's bear no accounting charge for option compensation. The result of granting options based on "perceived costs" is that "too many options will be granted to too many people" (pg. 144). If high levels of grants to non-executives results from inefficient option grants, then the negative coefficient on TOP5SO_PCT suggests that firms that do not grant large levels of options to on-executives (i.e., firms that do not have inefficient granting policies) are less likely to disavow, and conversely, firms that do grant large levels of SOC to rank and file employees (i.e., firms with inefficient granting policies) are more likely to disavow SOC.

¹⁷ We also re-estimate the models, substituting ROE_DIFF and PM_DIFF for ROA_DIFF, where ROE_DIFF (PM_DIFF) equals the difference between the ROE (profit margin) based on reported net income and ROE (profit margin) based on pro forma income adjusted for SOC expense. The coefficient for each of these measures is not significant.

high levels of pay. Instead, firms appear to be motivated, at least partially, by their top executives being awarded large amounts of SOC instead of other types of compensation or by their top executives being awarded a smaller proportion of stock option compensation relative to all employees.

For the reputation cost controls, OPTION_IND is significant in only one specification while NEW_CEO is not significant in any specification. Thus, reputation costs do not appear to motivate disavowals. With respect to the auditor, firms audited by Arthur Andersen, Deloitte and Touche, KPMG, or PricewaterhouseCoopers are significantly less likely to disavow, compared to firms that have a non-Big 5 auditor. In contrast, firms audited by Ernst and Young are significantly more likely to disavow. These multivariate results confirm the univariate results reported in Table 3 that clients of Ernst and Young are more likely to disavow SOC than are clients of other Big 5 audit firms. We explore this issue more fully later in this section.

Results for Fiscal 2001

In Panel B of Table 4 we re-estimate equation (1) for the fiscal 2001 sample. We include an indicator variable (DISAVOW96) for firms that disavowed SOC during the adoption year. As expected, this coefficient is positive and significant ($p < 0.01$) in all specifications.

Consistent with the adoption-year results, the coefficient on TYEARS<3 is significant and positive ($p = .05$, one tailed), as is the coefficient on Ernst and Young (largest $p = 0.01$). In contrast to the adoption-year results, TOP5SO_PCT is not significantly different from zero in any specification and SOC_PCT is only significant in some specifications and then, at lower levels than in the adoption year. Also in contrast to the adoption-year results, we find that larger firms (SIZE) and better performing firms (RET1YR) are less likely to have disavowed in fiscal 2001 while firms operating in option intensive industries (OPTION_IND) are more likely.

Results for Fiscal 2001 Through 2005

Panel C of Table 4 reports results from estimating equation (1) for fiscal years 2002 through 2005. As with Panel B, we include DISAVOW96 as a control variable; it is positive and significant in all specifications for each year.

For fiscal year 2003 (2004), we replace TYEARS<3 with TYEARS<4 (TYEARS<5) because all firms in the 2001 sample have been trading for at least three years by fiscal 2003. Consistent with fiscal 2001, the short trading history variable is positive and significant in fiscal 2002 through 2004 (largest $p < 0.01$, one-tail). Also consistent with fiscal 2001, OPTION_IND and SIZE are significant in each year. Although the coefficient on Ernst and Young remains positive, it is no longer significant. The coefficients on the other Big 5 audit firms are still negative and generally significant in each year.

For fiscal 2005, we do not include a short trading history variable because all firms in the 2001 sample have at least five years of trading history by fiscal 2005. The only variables that explain the disavowal decision in fiscal 2005 are DISAVOW96, OPTION_IND, and SIZE. The contrasting results for fiscal 2005 are likely explained by (1) managements' reduced willingness to disavow SOC given the mandated change to the fair value approach in fiscal 2006 under SFAS 123R and/or (2) firms' concerns about the reliability of SOC diminishing as they develop a trading history and as better models for valuing employee stock options were developed (e.g., advanced applications of lattice models).

Additional Analyses for Levels Specification

Additional control variables. Although we have attempted to include all relevant control variables in our model, we estimate additional levels specifications to ensure that our results hold when we control for free cash flow (FCF), the firm's debt-to-equity (D/E) and market-to-book

ratios (M/B), and the level of SOC expense (SOCE). We re-estimate equation (1), supplementing the model with these four variables. In untabulated results, none of these additional control variables are significantly different from zero, except for the M/B ratio in the adoption year. In addition, results for our other variables are qualitatively similar to those reported in Table 4.

Disavowals and backdating of stock options. Backdating of stock options is a controversial practice where instead of setting the grant date as the current or a future date, the firm sets the grant date equal to a past date when the firm's stock price was particularly low (Collins et al. 2008). Assuming that the exercise price is equal to the grant-date stock price, backdating results in a higher level of SOC expense (because holding current stock price constant, options are more valuable the lower the exercise price). Consequently, by increasing the magnitude of SOC expense, backdating may motivate firms to opportunistically disavow their SOC estimates. To investigate this possibility, we match our sample firms to Collins et al. (2008)'s sample of backdating firms. The first overlapping year is fiscal 2001. For fiscal years 2001 through 2004 we re-estimate equation (1) for our sample firms that overlap with the Collins et al. (2008) sample and include an indicator variable set equal to one if the firm backdated its options, and zero otherwise. The results (untabulated) indicate that the backdating variable is not significantly different from zero in any specification, inconsistent with backdating influencing the disavowal decision. Further, the results for our other variables are qualitatively similar to those reported in Table 4.

Disavowals and audit firm. The results reported in Tables 3 and 4 suggest that a firm's auditor is associated with a disavowal disclosure. In particular, the results are consistent with clients of Ernst and Young being significantly more likely to disavow than clients of other Big 5 audit firms. To test this more directly, we re-estimate equation (1), keeping the indicator

variable for Ernst and Young, but replacing the indicator variables for Arthur Anderson, Deloitte and Touche, KPMG, and PricewaterhouseCoopers with a new variable, NAT_AUDITOR. This variable is an indicator variable set equal to one a Big 5 auditor other than Ernst and Young audits the firm, and zero otherwise. The results (untabulated) indicate that the coefficient on EY is positive and significant in all specifications for all years; the coefficient on NAT_AUDITOR is negative in all years, but only significant in some years. To estimate the economic significance of being a client of Ernst and Young, we calculate the *Odds Ratios* in the adoption year. The *Odds Ratio* for EY is 11.65, which means that clients of Ernst and Young are over 11 times more likely to disavow than are clients of other audit firms.

In an attempt to understand what is driving the difference between Ernst and Young and the other Big 5 audit firms, we examine our reliability measures and control variables partitioned by the firm's auditor. Table 5 reports this analysis. Importantly, there is no significant difference in SOC expense across the clients of the different audit firms. Further, the clients of Ernst and Young do not appear to differ systematically from the clients of the other Big 5 firms combined, in terms of client characteristics, reliability measures, opportunism control variables, or reputation cost control variables. In summary, there does not appear to be a systematic pattern of significant differences between the clients of Ernst and Young and any other individual Big 5 firm in terms of the costs and benefits of disavowal disclosures, with the possible exception of the clients of Arthur Andersen on the reliability measures.

[Insert Table 5 here.]

In Table 6 we investigate the location of the Ernst and Young office conducting the audit (from Audit Analytics) to determine if a particular office of Ernst and Young accounts for the higher disavowal rate of Ernst and Young clients. We find that although the disavowal rate is

highest among Ernst and Young offices located in the western and southeastern regions of the U.S., Ernst and Young offices in all regions of the U.S. allow disavowal disclosures in their client's stock option footnote. This suggests that these disavowal disclosures are not caused by idiosyncratic preferences of particular offices or regions.

[Insert Table 6 here.]

While we cannot rule out the possibility that Ernst and Young clients have unobservable characteristic that make estimating SOC particularly difficult, our findings suggest that, in addition to reliability concerns and other firm-specific disclosure costs and benefits, SOC disavowals are influenced by third-party (i.e., audit firm) global opinions. In future analyses, we plan to investigate comment letters by national audit firms to the FASB regarding SFAS 123 to assess whether there are systematic differences in the positions of the audit firms with respect to the fair value approach in SFAS 123. A preliminary analysis (see Appendix B) of the response to the Invitation to Comment suggests that Ernst and Whinney, one of the predecessor firms of Ernst and Young, was the only (then) Big 8 audit firm that opposed the fair value approach.

Discussion of Levels Analysis Results

Overall, our results suggests that firms are more likely to disavow their SOC estimate when the estimate is arguably less reliable due to an insufficient trading history (as measured by TYEARS<3). TYEARS<3 is consistently positive and significant across all specifications for all years. To estimate the economic significance of this effect, we calculate the *Odds Ratios* for the final specification in the adoption year. The *Odds Ratio* for TYEARS<3 is 2.45, which indicates that firms whose shares have traded publicly for less than three years are more than twice as likely to disavow than are firms whose shares have traded for more than three years.

In addition, as discussed above, the clients of Ernst and Young are also considerably more likely to disavow than are clients of other audit firms. This result is surprising given that we do not find systematic differences between the costs and benefits of the disavowal disclosure for Ernst and Young clients (i.e., Table 5). Preliminary evidence (i.e., Appendix B) is consistent with Ernst and Young partners believing SOC estimates to be more unreliable than do partners at other audit firms. Accordingly, one explanation for the relation between Ernst and Young and disavowals is that Ernst and Young partners successfully convinced their clients that the SOC estimate is unreliable and in so doing increased the perceived benefits (to management) of the disavowal disclosure.

Empirical Results for Change Specification

Table 7 reports the results from the changes specification in Equation (2). The focus in Panel A (B) is a firm's decision to initiate (discontinue) a disavowal disclosure in one of the years from fiscal 2002 through 2005. We discuss each below.

[Insert Table 7 here.]

Decision to Initiate a Disavowal Disclosure

The firms included in this analysis are limited to firms that could initiate a disavowal disclosure; that is, firms that did not disavow in the previous fiscal year. We find that firms are more likely to initiate a disavowal disclosure when volatility in returns over the past 12 months increased relative to the previous 12 months (VOL 12M CHG; $p < 0.06$, one-tail), consistent with concerns about the reliability of the future volatility estimate. If volatility has increased, firms must assess whether it is simply a transitory effect or is indicative of higher volatility in the future. Regardless of which one of these the firm believes is true, the firm's historical volatility measure will need to be adjusted to accurately reflect expected future volatility. If the increased

volatility is (is not) considered transitory, the historical volatility measure overstates (understates) future volatility. The adjustments needed for the historical volatility measure would be relatively subjective, reducing the reliability of the estimate of expected future volatility.

EY_CHG is positive and significant in all specifications, consistent with firms being more likely to initiate a disavowal disclosure if they switched to Ernst and Young. We are, however, unable to assess whether having Ernst and Young as an auditor motivated the firm's decision to initiate a disavowal disclosure or whether the firm wanted to disavow and sought out Ernst and Young as an auditor because it is more open to disavowal disclosures than are the other Big 5 auditors.

We also observe a significant negative coefficient on ROA_DIFF_CHG, indicating that firms with large increases in SOC expense relative to net income are less likely to initiate a SOC disavowal. A possible explanation for this result is that firms may believe that financial statement users will perceive a SOC disavowal disclosure in the year the firm experiences a large increase in SOC expense as opportunistic—and thus lacking in credibility—because the disclosure is consistent with management's incentives to downplay SOC expense (Kelley 1972; Mercer 2004; Hodge et al. 2006). Finally, we find that firms that switched their accounting method for employee stock options from the intrinsic method to the fair value approach in fiscal 2003 are less likely to have initiated a disavowal disclosure.

Decision to Discontinue a Disavowal Disclosure

The firms included in this analysis are limited to firms that could discontinue a disavowal; that is, firms that disavowed in the previous fiscal year. We observe positive and significant coefficients on ROA_DIFF_CHG, EXP 2003, and YEAR. These findings suggest that firms that switched from the intrinsic method to the fair value approach for SOC in 2003 are

more likely to discontinue disavowals and that the frequency of discontinuing a disavowal disclosure increases over time. Firms may be less likely to disavow later in our sample as the likelihood of SFAS 123R being implemented—and thus mandated expensing of SOC—becomes more likely and as reliability concerns diminish.

Alternative Test of Reliability Problems

The inputs into a firm's option pricing model are estimates of future outcomes. If the inputs are less reliable for firms that disavow, one would expect, *ceteris paribus*, a lower level of correspondence between the estimated input and the subsequently realized outcome for firms that disavow. Consistent with this logic, we examine whether disavowal disclosures moderate the relation between a firm's historical volatility (as an estimate of its expected future volatility) and its subsequently realized volatility. If disavowals reflect legitimate reliability concerns, we expect the correspondence between a firm's historical volatility and its subsequently realized volatility to be lower for firms that disavow. Although there are external, unanticipated factors that could affect the realized volatility, it is unlikely that such factors would vary systematically with the presence of a prior disavowal disclosure. Thus, such external, unanticipated factors would most likely create noise, and thus bias against finding a moderating effect.

To address the moderating effect of disavowals, we use the specification in Equation (3).

$$\text{VOL_ACT}_i = \phi_0 + \phi_1 \text{VOL. EST}_i + \phi_2 \text{VOL. EST}_i * \text{DISREL}_i + \varepsilon_i \quad (3)$$

VOL_ACT is the realized volatility. We calculate it as the standard deviation of returns over the 12, 36 or 60 months beginning the first month after the end of the sample year. VOL. EST is our

estimate of the expected future volatility. Consistent with SFAS 123, our estimate is the firm's historical volatility over the 60 months prior to the end of the sample year.¹⁸

The results from estimating this model for the adoption year sample are reported in Table 8. In all three specifications, VOL ESTIMATE is positive and significant, indicating a positive association between historical volatility and future volatility. More importantly, the incremental coefficient on VOL. ESTIMATE for DISREL firms is significant and negative when the realized volatility is measured over the 36 months following the estimation year (coefficient = -0.02, $p = 0.065$, one tailed) and in the 60-month specification (coefficient = -0.26, $p = 0.044$, one tailed). These findings are consistent with the correspondence between historical volatility and future volatility being lower for firms that had disavowed, consistent with disavowals reflecting difficulty in using historical returns data to reliably estimate the level of future volatility, particularly as the future time horizon lengthens.

[Insert Table 8 here.]

VI. Conclusions

In response to accounting standards that require reporting of fair value information, some firms have included disclosures in their audited financial statements that explicitly question the reliability of the mandated fair value information. We examine, in the context of employee stock option accounting under SFAS 123, whether the reliability of mandated fair value information is lower for firms that include such disavowals in the notes to their audited financial statements.

Our results suggest that firms are more likely to disavow the reliability of their SOC estimate when inputs into the stock-option pricing model (in particular the estimate of expected

¹⁸ If a firm does not have a 60-month trading history, we use the historical 60-month volatility for all Execucomp firms within the same Industry as the basis for estimating its future volatility, consistent with guidance given in SFAS 123.

future return volatility) are less reliable. This finding is consistent with disavowals reflecting legitimate concerns by management about the reliability of its fair-value SOC estimate. In contrast, we find little evidence that stock option disavowals are motivated by managers' desires to hide excessive executive compensation or the negative impact of SOC expense on financial performance metrics; these results are inconsistent with the notion that managers use disavowals to opportunistically downplay the magnitude of SOC expense. Surprisingly, we also find that not only is a firm more likely to disavow when its financial statements are audited by Ernst and Young, but it also is more likely to initiate a disavowal disclosure when it switches to Ernst and Young. Preliminary analysis suggests that this audit firm effect may be driven by the beliefs of the Ernst and Young partners about the reliability of the SOC fair-value estimate. In subsequent drafts, we plan to investigate the relationship between disavowals, the reliability of fair value estimates, and the lobbying of Ernst and Young to the FASB about SFAS 123 and 123R.

The recent financial crisis facing the financial industry and the broader economy has increased the saliency of concerns about the reliability of fair value disclosures. We contribute to the ongoing discussion about the role of fair value information in financial reporting by examining voluntary disclosures that disavow the reliability of mandated fair value information. Our evidence is consistent with these voluntary disclosures providing qualitative information that attempts to overcome—rather than exploit—short-comings in GAAP, consistent with the discussion in SFAS 157 that qualitative disclosures about fair value measurement improves the quality of information provided to financial statement users, and thus enhances their understanding about the fair value estimates.

Appendix A

Effect of Input Estimation Errors on SOC Expense

Stock option disavowals typically state that the SOC estimate generated by option pricing models is highly sensitive to the magnitude of the inputs. To illustrate the effect of input estimation errors on both the SOC fair-value estimate and the SOC expense, we calculate the effect of underestimating stock return volatility on the 282 million employee stock options that Cisco Systems granted in fiscal 2002. The illustration is based on the following information, which we extracted from Cisco System's fiscal year 2002 stock option footnote.

Expected dividend yield	0%
Risk-free interest rate	4.7%
Expected stock return volatility	47.5%
Expected life of options	5.5 years
Number of options granted in fiscal 2002	282 million
Reported net income (intrinsic method)	\$1,893 million
Stock option expense, net of tax	\$1,520 million
Pro forma net income (fair value method)	\$373 million

To simplify the example, we make the following assumptions: (1) the current stock price is equal to the average stock price over the fiscal year (\$17), (2) the strike price is equal to the current market price, and (3) the service period is four years. In addition, we focus solely on the 282 million options that Cisco Systems granted during fiscal 2002. The latter means that we ignore the effect of misestimation errors in prior years on the current year's SOC expense.

Based on Cisco System's option pricing inputs and our assumptions, the Black-Scholes value of each of the 282 million options granted in fiscal 2002 is about \$8.45, resulting in a total SOC fair value estimate of \$2,384 million for these 282 million options. Based on the assumed four-year service period, the fiscal 2002 SOC expense for these 282 million options is \$596 million.

We re-calculate both the Black-Scholes SOC fair value estimate for these 282 million options and the fiscal 2002 SOC expense for these options for three different under-estimations of stock return volatility: one percentage point, five percentage points, and 10 percentage points. Table A-1 reports the reductions in the SOC fair value estimate and the fiscal 2002 SOC expense for these estimation errors. For *each* percentage point that Cisco Systems' stock return volatility is underestimated, the Black-Scholes fair value estimate of these 282 million employee stock options is reduced by 1.4%, or \$33 million. Similarly, *each* percentage point underestimation of the volatility reduces Cisco System's 2002 SOC expense estimate by \$8.25 million, which is equal to 0.4% of its reported fiscal 2002 net income.

Table A-1
Effect of Stock Return Volatility Estimation Error on SOC Estimates

Assumed True Stock Return Volatility	Stock Return Volatility Used to Estimate SOC	Stock Return Volatility Estimation Error	Reduction in Black-Scholes Fair Value Estimate of SOC	Reduction in Fiscal 2002 SOC Expense	SOC Expense Reduction as % of Reported Net Income
47.5%	46.5%	-1.0%	\$33 million	\$8.25 million	0.4%
47.5%	42.5%	-5.0%	\$166 million	\$41.5 million	2.2%
47.5%	37.5%	-10.0%	\$336 million	\$84.0 million	4.4%

Appendix B

National Public Audit Firm Responses to the Invitation to Comment on Stock Option Accounting

ARTHUR ANDERSEN & CO: More fundamental, however, is the need for recognition in financial statements of the value to the enterprise of all stock rights, warrants, and options awarded to employees to reflect properly the compensation. Various alternative methods of valuing the option right itself must be considered ... Precision should not be an overriding objective; a reasonable approximation of value is the goal.

ARTHUR YOUNG: APB Opinion No. 25 produces inappropriate results, and its provisions should be substantially revised. Rights granted ... should be accounted for as compensation....The development in recent years of option pricing models leads us to reject the view that it is impractical to determine reasonable values as of the grant date.

COOPERS & LYBRAND: We believe that employee award plans are compensatory. We believe compensation cost should be determined by valuing the right, assuming a method for determining that value is practical to apply. This may be more easily accomplished today because of the increased trading in options during the past few years.

DELOITTE, HASKINS & SELLS: We support the FASB's project to comprehensively reconsider an employer's accounting for compensation plans involving certain rights granted to employees....We believe that the granting of rights to employees under a compensation plan is an exchange transaction that should be measured at that date.....

ERNST & WHINNEY: We believe the current authoritative literature, principally APB Opinion 25, provides reasonable practical guidance on accounting for stock compensation plans, and major changes are not needed. While we agree there are conceptual and practical problems with Opinion 25, we are not convinced that the alternatives offer a better solution.

PEAT MARWICK: We believe that ... rights granted to employees involve some amount of compensation cost or expense....The method of determining value is a difficult issue ... the method adopted should be one that generally results in consistent valuations by different evaluators under similar circumstances.

PRICE WATERHOUSE: Compensation cost measured at grant date (for stock plans) should represent the value of the contingent equity interests issued to employees... We believe the Board should specify use of a particular option pricing model...

TOUCHE ROSS & CO: We consider it essential that the standard ...recognize compensation in exchange for services for all benefits transferred from the enterprise to employees... We recognize the inherent lack of precision in measuring such rights but believe that a simple and rational approach must be developed.

References

- Aboody, D., M. Barth, and R. Kasznik. 2003. Do firms understate option-based compensation expense disclosed under SFAS 123? *Review of Accounting Studies* 11: 429-461.
- Aboody, D., M. Barth, and R. Kasznik. 2004. Firms' voluntary recognition of stock-based compensation expense. *Journal of Accounting Research* 42: 123-149.
- Alford, A. and J. Boatsman. 1995. Predicting long-term stock return volatility: Implications for accounting and valuation of equity securities. *The Accounting Review* 70: 599-618.
- Baker, T. 1999. Options reporting and the political costs of CEO pay. *Journal of Accounting, Auditing and Finance* 14: 125-145.
- Balsam, S., H. Mozes, and H. Newman. 2003. Managing pro forma stock option expense under SFAS No. 123. *Accounting Horizons* 17: 31-45.
- Bates, D. S. 1996. Testing option pricing models. Chapter 20 in *Handbook of Statistics and Finance 14: Statistical Methods in Finance*. Amsterdam, The Netherlands: North-Holland.
- Baginski, S., E. Conrad, and J. Hassell. 1993. The effects of management forecast precision on equity pricing and on the assessment of earnings uncertainty. *The Accounting Review* 68: 913-927.
- Black, F. 1989. How to use the holes in the Black-Scholes. *Journal of Applied Corporate Finance* 1: 67-73.
- Black, F., and M. Scholes. 1973. The pricing of options and corporate liabilities. *Journal of Political Economy* (May/June): 637-659.
- Bowen, R., M. Johnson, and T. Shevlin. 1989. Informational efficiency and the information content of earnings during the market crash of October 1987. *Journal of Accounting and Economics* 11: 225-254.
- Burgstahler, D., and I. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24: 99-126.
- Burgstahler, D., and M. Eames. 2006. Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises. *Journal of Business Finance and Accounting* 33: 633-652.
- Calomiris, C., and R. Hubbard. 2004. Options pricing and accounting practice. American Enterprise Institute Working Paper #103.

- Campbell, J., A. Lo, and A. MacKinlay. 1997. *The Econometrics of Financial Markets*. Princeton, NJ: Princeton University Press.
- Collins, D., S.P. Kothari, J. Shanken, and R. Sloan. 1994. Lack of timeliness and noise as explanations for the low contemporaneous return-earnings association. *Journal of Accounting and Economics* 18: 289-324.
- _____, G., Guojin, H. Li. 2008. Corporate governance and backdating of executive stock options. *Forthcoming in Contemporary Accounting Research*.
- Dechow, P., A. Hutton, and R. Sloan. 1996. Economic consequences of accounting for stock-based compensation. *Journal of Accounting Research* 34: 1-20.
- Defond, M., and J. Jiambalvo. 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17: 145-176.
- DeGeorge, F., J. Patel., and R. Zeckhauser. 1999. Earnings management to exceed thresholds. *Journal of Business* 72: 1-33.
- Fama, E., and K. French. 1997. Industry costs of equity. *Journal of Financial Economics* 43: 153-193.
- Frederickson, J., F. Hodge, and J. Pratt. 2006. The evolution of stock option accounting: Disclosure, voluntary recognition, mandated recognition, and management disavowals. *The Accounting Review* 81. 1073-1093.
- Han, J. and H. Tan. 2007. Investors' reactions to management guidance forms: The influence of multiple benchmarks. *The Accounting Review* 82: 521-543.
- Hassell, J. R. Jennings, and D. Lasser. 1988. Management earnings forecasts: Their usefulness as a source of firm-specific information to security analysts. *Journal of Financial Research* 11: 303-319.
- Hassett, K., and P. Wallison, P. 2003. The economic and legal consequences of requiring the expensing of employee stock options without specifying the valuation method. American Enterprise Institute Working Paper # 101.
- Healy, P. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7: 85-107.
- Hill, N., S. Shelton, and K. Stevens. 2002. Corporate lobbying behavior on accounting for stock-based compensation: Venue and format choices. *Abacus* 38: 78-90.

- Hirst, E., L. Koonce, and J. Miller. 1999. The joint effect of management's prior forecast accuracy and the form of its financial forecasts on investor judgments. *Journal of Accounting Research* 37:1-24.
- Hirst, E., L. Koonce, and P. Simko. 1995. Investor reactions to financial analysts' research reports. *Journal of Accounting Research* (Autumn): 335-351.
- Hodder, L., W. Mayew, M. McAnally, and C. Weaver. 2006. Employee stock option fair-value estimates: Do managerial discretion and incentives explain accuracy? *Contemporary Accounting Research* 23: 933-75.
- Hodge, F., P. Hopkins, and J. Pratt. 2006. Management reporting incentives and classification credibility: The effects of reporting discretion and reputation. *Accounting, Organizations and Society* 31: 623-634.
- Holthausen, R., and R. Verrecchia. 1990. The effect of informedness and consensus on price and volume behavior. *The Accounting Review* 65. 191-208.
- Holthausen, R., D. Larcker, and R. Sloan. 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics* 19: 29-74.
- Johnston, J. 1984. *Econometric methods*. McGraw-Hill. New York, NY.
- Kelley, H. 1972. Attribution in social interaction. In *Attributions: Perceiving the Causes of Behavior*, edited by E. Jones, D. Kanouse, H. Kelley, R. Nisbett, S. Valins, and B. Weiner, 151-174. Morristown, NJ: General Learning Press.
- Kim, O., and R. Verrecchia. 1991. Trading volume and price reactions to public announcements. *Journal of Accounting Research* 29: 302-321.
- King, R., G. Pownall, and G. Waymire. 1990. Expectations adjustments via timely management forecasts: Review synthesis, and suggestions for future research. *Journal of Accounting Literature* 9: 113-144.
- Libby, R., M. W. Nelson, and J. Hunton. 2006. Recognition v. disclosure: Auditor tolerance for misstatement, and the reliability of stock-compensation and lease information. *Journal of Accounting Research* (June): 533-560.
- Libby, R., H. Tan, and J. Hunton. 2006. Does the form of managements' earnings guidance affect analysts' earnings forecasts? *The Accounting Review* 81: 251-270.
- Maines, L., and J. Wahlen. 2006. The nature of accounting information reliability: Inferences from archival and experimental research. *Accounting Horizons* 20: 399-425.

- Mercer, M. 2004. How do investors assess the credibility of management disclosures? *Accounting Horizons*: 185-196.
- Morse, D., J. Stephan, and E. Stice. 1991. Earnings announcements and the convergence (or divergence) of beliefs. *The Accounting Review* 66: 376-388.
- Murphy, K. 1996. Reporting choice and the 1992 proxy disclosure rules. *Journal of Accounting, Auditing and Finance* 11: 497-515.
- Murphy, K. 2003. Stock-based pay in new economy firms. *Journal of Accounting and Economics* 34: 129-147.
- Nelson, K. 1996. Fair value accounting for commercial banks: An empirical analysis of SFAS No. 107. *The Accounting Review* 71 (2): 161-182.
- Richardson, S., R., Sloan, M. Soliman, and I. Tuna. 2005. Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics* 39: 437-485.
- Tversky, A., and D. Kahneman. 1974. Judgment under uncertainty. Heuristics and biases. *Science* 185: 1124-1131.

Table 1
Disavowal Descriptive Statistics

Panel A: Disavowals by year

	ADOPTION YEAR	2001	2002	2003	2004	2005
Number of firms with a disavowal disclosure	90	197	203	198	159	97
Number of firms with no disavowal disclosure	1,288	1,146	1,112	1,074	1,053	1,051
Total number of firms	1,378	1,343	1,315	1,272	1,212	1,148
Percentage of firms with a disavowal disclosure	6.5%	14.7%	15.4%	15.6%	13.1%	8.4%

Panel B: Disavowal changes by year

	2002	2003	2004	2005
Number of firms that initiated a disavowal disclosure that year	38	17	6	2
Number of firms that discontinued a disavowal disclosure that year	26	15	27	57
Percentage of firms that changed disavowal strategy that year	4.9%	2.5%	2.7%	5.1%

The SFAS No. 123 adoption-year sample (i.e., fiscal years 1996/1997) consists of the S&P 500, S&P 400 MidCap, and S&P 600 SmallCap firms covered by the 1996 Execucomp data base that use stock options to compensate employees. For firms required to report under SFAS No. 123 for fiscal 1996 and for firms that early adopt SFAS No. 123, the adoption year sample reflects data from fiscal 1996. For firms required to adopt in fiscal 1997 (that did not early adopt), the adoption year sample reflects data from fiscal 1997. The 2001 sample consists of all fiscal 2001 Execucomp firms that use stock options to compensate employees with the requisite data. The subsequent disavowal disclosures of the 2001 sample are then tracked over 2002-2005 period and reported in the respective columns.

Table 2
Descriptive Statistics Partitioned by DISREL

	1996/1997					2001				
	DISREL =0		DISREL =1		Diff	DISREL =0		DISREL =1		Diff
	Mean	Std Dev	Mean	Std Dev		Mean	Std Dev	Mean	Std Dev	
<i>Firm Characteristics</i>										
ASSETS	7,598	26,049	3,473	7,322	***	12,601	48,761	8,143	32,632	
SALES	3,630	9,125	1,928	2,905	***	5,286.	13,150	3,311	15,951	
OIBD	653.81	1,768.	430.54	1,108.	*	923.21	2,786	467.40	1,392	***
SOCE	527.87	6,895	34.34	116.85	**	52.07	177.71	67.01	235.61	
BM	0.47	0.31	0.40	0.27	**	0.53	0.47	0.65	2.45	
<i>Reliability Measures</i>										
STDVOL-60M	0.03	0.03	0.03	0.02		0.04	0.03	0.05	0.04	***
STDVOL-36M	0.02	0.02	0.02	0.02		0.04	0.04	0.05	0.05	*
STDVOL-12M	0.01	0.00	0.01	0.00		0.01	0.01	0.01	0.01	*
TYEARS<3	0.05	0.22	0.08	0.27		0.06	0.25	0.07	0.25	
NO_LTOPT	0.87	.033	0.88	0.33		0.81	0.40	0.82	0.39	
<i>Opportunism Controls</i>										
SOC_PCT	0.29	0.25	0.37	0.28	***	0.43	0.29	0.49	0.29	***
TOP5SO_PCT	0.50	0.48	0.30	0.42	***	0.22	0.28	0.23	0.28	
XSCOMP	-0.02	1.47	-0.03	1.16		-0.39	2.28	-0.58	2.48	
ROA_DIFF	0.05	0.23	0.03	0.08	*	0.02	0.05	0.03	0.06	**
EPS_DIFF	0.14	0.32	0.19	.032		0.24	0.24	0.30	0.27	***
<i>Reputation Cost Controls</i>										
NEW_CEO	0.17	0.37	0.15	0.36		0.15	0.36	0.12	0.33	
OPTION_IND	0.26	0.44	0.32	0.46		0.30	0.46	0.39	0.49	***
<i>Firm Region</i>										
WEST	0.19	0.39	0.29	0.46	**	0.21	0.41	0.28	0.45	**
MIDWEST	0.25	0.43	0.24	0.43		0.25	0.43	0.20	0.40	
SOUTHEAST	0.16	0.37	0.22	0.42		0.15	0.36	0.22	0.41	*
SOUTHWEST	0.11	0.31	0.11	0.32		0.11	0.32	0.11	0.31	
MIDATLANTIC	0.17	0.38	0.08	0.27	***	0.17	0.38	0.08	0.27	***
NEWENGLAND	0.09	0.28	0.06	0.23		0.08	0.28	0.09	0.28	

Except for percentages, all values are reported in millions of dollars. The SFAS No. 123 adoption-year sample (i.e., 1996/1997) consists of the S&P 500, S&P 400 MidCap, and S&P 600 SmallCap firms covered by the 1996 Execucomp data base that use stock options to compensate employees. For firms required to report under SFAS No. 123 for fiscal 1996 and for firms that early adopt SFAS No. 123, the adoption year sample reflects data from fiscal 1996. For firms

required to adopt in fiscal 1997 (that did not early adopt), the adoption year sample reflects data from fiscal 1997. The 2001 sample consists of all fiscal 2001 Execucomp firms that use stock options to compensate employees with the requisite data. Variable definitions are provided below.

DISREL is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm's 10K, and zero otherwise. **ASSETS** and **SALES** are the firm's assets (Compustat item #6) and sales (Compustat item #12), respectively. **OIBD** is the firm's operating income before depreciation as reported by Execucomp. **SOCE** is SOC expense estimated as the difference between reported net income and pro forma income adjusted for stock option expense (Compustat item #399) divided by $1 - \text{tax rate}$ (35 percent) for firms that do not recognize SOC expense and the sum of implied option expense (as just described) and recognized option expense (Compustat item #398) for firms that do recognize SOC expense. **BM** is the firm's book-to-market ratio as reported by Execucomp. **STDVOL-60M (STDVOL-36M)** is the standard deviation of the five (three) annual volatility measure calculated from CRSP monthly stock returns. **STDVOL-12M** is the standard deviation of monthly volatility over the 12 months preceding the disavowal year, where monthly volatility is calculated from daily returns. **TYEARS<3** is a indicator variables set equal to one if the firm has been trading for less than three years, and zero otherwise. **NO_LTOPT** is an indicator variable set equal to one if the firm does not have longer-term, traded, stock options, defined as options based on the firm's stock price with expiration dates at least 365 days from the beginning of the fiscal year. **SOC_PCT** is ratio of SOC granted to the top five executives (Execucomp item BLK_VALUE) to the total compensation paid to the top five executives (Execucomp item TDC1). **TOP5SO_PCT** is the percentage of implied option expense awarded to the top five highest paid executives (sum of the Black Scholes value of options granted to the each of the five highest paid executives divided by SOCE). **XSCOMP** is abnormal total compensation awarded to the top five highest paid executives, where expected compensation is based on an industry-year model of executive compensation. If data for calculating SOC_PCT, TOP5SO_PCT, or XSCOMP is unavailable for all five executives, we calculate the value of the variable for the CEO and assume that the CEO's percentage or abnormal compensation is representative of the entire executive team. **ROA_DIFF** is the difference between ROA based on net income (excluding implied option expense) and ROA based on pro forma income adjusted for SOC expense. **EPS_DIFF** is the reduction in earning per share that would occur if SOC had been recognized (SOCE/shares outstanding). **WEST, MIDWEST, SOUTHEAST, SOUTHWEST, MIDATLANTIC, and NEWENGLAND** are indicator variables set equal to one if the firm is headquartered in the WEST, MIDWEST, SOUTHEAST, SOUTHWEST, MIDATLANTIC, and NEWENGLAND, respectively, and zero otherwise.

Table 3
Disavowal Behavior by Audit Firm

	Arthur Andersen	Deloitte and Touche	Ernst and Young	KPMG	Pricewaterhouse Coopers
Total number of audits	496	1,428	1,988	1,208	2,015
Disavowal percentage	5%	6%	28%	6%	8%
Pair wise significance tests:					
Arthur Andersen		ns	0.05	ns	ns
Deloitte and Touche	ns		0.05	ns	ns
Ernst and Young	0.05	0.05		0.05	0.05
KPMG	ns	ns	0.05		ns
PricewaterhouseCoopers	ns	ns	0.05	ns	

The number of audits is the sum of sample-firm audits conducted by each Big 5 audit firm in the SFAS 123 adoption year and from fiscal 2001 through fiscal 2005.

Table 4
Logistic Regression Examining the Incidence of DISREL by Year

$$\text{DISREL}_i = \alpha_0 + \alpha_1 \text{RELIABILITY}_i + \alpha_2 \text{OPPORTUNISM}_i + \alpha_3 \text{REPUTATION COSTS}_i + \sum_{n=1}^5 \gamma_n \text{AUDITFIRM}_n + \sum_{n=1}^7 \kappa_n \text{IND}_n \\
\alpha_4 \text{SIZE}_i + \alpha_5 \text{RET1YR}_i + \varepsilon_i$$

Panel A: SFAS No. 123 Adoption year (fiscal 1996/1997)

	Pred	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)		Specification (6)	
		Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P
Reliability Measures													
STDVOL-60M	+	-2.85	0.67	-2.89	0.67	-0.19	0.97						
STDVOL-12M	+							-31.7	0.35				
TYEARS<3	+									0.92	0.06	0.88	0.07
NO_LTOPT	+	0.32	0.45	0.36	0.40	0.14	0.73	0.22	0.60	0.21	0.62	0.25	0.56
Opportunism Controls													
SOC_PCT	+	1.77	<.01	1.84	<.01			1.84	<.01	1.74	<.01	1.80	<.01
TOP5SO_PCT	+	-1.49	<.01	-1.54	<.01			-1.53	<.01	-1.51	<.01	-1.55	<.01
XSCOMP	+					-0.05	0.62						
ROA_DIFF	+	-1.38	0.17			-0.37	0.61			-1.42	0.14		
EPS_DIFF	+			-0.47	0.25			-0.46	0.25			-0.44	0.27
Reputation Controls													
NEW_CEO	?	-0.21	0.55	-0.25	0.48	-0.33	0.38	-0.22	0.52	-0.35	0.31	-0.37	0.28
OPTION_IND	+	0.34	0.29	0.36	0.25	0.51	0.09	0.30	0.33	0.21	0.49	0.24	0.43
Auditors													
AA	?	-1.78	0.01	-1.78	0.01	-1.69	0.02	-1.82	0.01	-1.83	0.01	-1.83	0.01
DT	?	-1.60	0.03	-1.63	0.02	-1.37	0.05	-1.37	0.04	-1.39	0.04	-1.42	0.03
EY	?	0.91	0.08	0.88	0.09	0.93	0.07	0.93	0.07	0.96	0.06	0.93	0.07
KPMG	?	-1.59	0.03	-1.62	0.02	-1.34	0.06	-1.62	0.02	-1.58	0.03	-1.60	0.03
PWC	?	-1.36	0.03	-1.38	0.02	-1.15	0.06	-1.33	0.03	-1.37	0.02	-1.38	0.02
Other Controls													
SIZE	?	0.04	0.68	0.06	0.59	0.08	0.43	-0.03	0.80	0.01	0.93	0.02	0.80
RET1YR	-	0.00	0.70	0.00	0.76	0.00	0.87	0.00	0.89	0.00	0.87	0.00	0.93
N=		1,322		1,322		1,266		1,364		1,378		1,378	
LR (P-Value)		<.0001		<.0001		<.0001		<.0001		<.0001		<.0001	
Pct. Concordant		84%		84%		80%		83%		83%		83%	

Panel B: Fiscal year 2001

	Pred	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)		Specification (6)	
		Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P
Reliability Measures													
STDVOL-60M	+	0.70	0.80	0.27	0.92	2.39	0.40						
STDVOL-12M	+							4.49	0.81				
TYEARS<3	+									0.59	0.10	0.58	0.11
NO_LTOPT	+	-0.12	0.71	-0.10	0.76	-0.19	0.56	-0.12	0.69	-0.23	0.46	-0.20	0.52
Opportunism Controls													
SOC_PCT	+	0.93	0.03	0.72	0.11			0.52	0.24	0.72	0.08	0.48	0.27
TOP5SO_PCT	+	-0.32	0.46	-0.12	0.79			0.19	0.66	0.01	0.98	0.24	0.57
XSCOMP	+					-0.02	0.70						
ROA_DIFF	+	-0.11	0.95			1.00	0.58			0.13	0.94		
EPS_DIFF	+			0.53	0.27			0.63	0.18			0.65	0.17
Reputation Controls													
NEW_CEO	?	-0.12	0.69	-0.10	0.79	-0.11	0.73	0.12	0.68	0.01	0.98	0.05	0.86
OPTION_IND	+	0.76	0.01	0.73	0.01	0.94	0.00	0.75	0.01	0.76	<.01	0.73	<.01
Auditors													
AA	?	-0.60	0.26	-0.59	0.27	-0.38	0.48	-0.33	0.52	-0.41	0.43	0.39	0.45
DT	?	-0.79	0.15	-0.77	0.16	-0.62	0.26	-0.52	0.33	-0.57	0.29	-0.55	0.30
EY	?	1.24	0.01	1.25	0.01	1.25	0.01	1.43	<.01	1.40	<.01	1.41	<.01
KPMG	?	-0.96	0.10	-0.97	0.09	-0.85	0.14	-0.89	0.12	-0.92	0.11	-0.94	0.10
PWC	?	-0.51	0.31	-0.51	0.31	-0.36	0.48	-0.38	0.43	-0.43	0.39	-0.43	0.38
Other Controls													
SIZE	?	-0.37	0.00	-0.35	<.01	-0.29	<.01	-0.33	0.00	-0.37	<.01	-0.36	<.01
RET1YR	-	-0.01	0.01	-0.01	<.01	-0.01	0.02	-0.01	0.01	-0.01	0.01	-0.01	0.01
DISAVOW96	+	4.84	<.01	4.86	<.01	4.62	<.01	4.81	<.01	4.88	<.01	4.90	<.01
N =		1,276		1,276		1,127		1,327		1,343		1,343	
LR (P-Value)		<.0001		<.0001		<.0001		<.0001		<.0001		<.0001	
Pct. Concordant		88%		87%		87%		88%		88%		88%	

Panel C: Fiscal years 2002 through 2005

	Pred	2002				2003				2004		2005	
		Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P	Coeff	P
Reliability Measures													
STDVOL-60M	+	1.33	0.62			2.87	0.26					-1.22	0.73
TYEARS<X	+			1.13	<.01			1.04	<.01	1.12	0.01		
NO_LTOPT	+	-0.42	0.12	-0.48	0.07	-0.26	0.30	-0.35	0.15	0.08	0.77	0.39	0.20
Opportunism Controls													
SOC_PCT	+	0.35	0.40	0.35	0.39	1.22	0.01	1.30	<.01	0.91	0.07	0.53	0.39
TOP5SO_PCT	+	-0.01	0.98	0.09	0.85	-0.07	0.89	-0.10	0.83	-0.85	0.11	-0.35	0.56
EPS_DIFF	+	0.36	0.41	0.50	0.25	0.13	0.79	0.12	0.80	0.28	0.58	0.10	0.86
Reputation Controls													
NEW_CEO	?	-0.20	0.55	-0.30	0.36	-0.08	0.78	-0.07	0.80	-0.56	0.11	-0.31	0.39
OPTION_IND	+	0.51	0.04	0.52	0.03	0.61	0.01	0.67	<.01	0.51	0.04	0.55	0.06
Auditors													
DT	?	-1.12	0.01	-1.09	0.01	-1.48	<.01	-1.36	<.01	-1.63	<.01	-1.03	0.08
EY	?	0.60	0.12	0.63	0.10	0.13	0.74	0.22	0.59	0.05	0.90	0.54	0.28
KPMG	?	-1.15	0.01	-1.21	0.01	-1.33	<.01	-1.25	0.01	-1.50	<.01	-0.90	0.13
PWC	?	-0.80	0.05	-0.80	0.05	-1.01	0.02	-.93	0.03	-1.14	<.01	-0.12	0.82
Other Controls													
SIZE	?	-0.34	0.00	-0.39	<.01	-0.30	<.01	-0.36	<.01	-0.43	<.01	-0.20	0.06
RET1YR	-	-0.01	0.05	-0.01	0.04	0.00	0.25	0.00	0.85	0.00	0.70	0.00	0.27
DISAVOW96	+	3.36	<.01	3.41	<.01	3.10	<.01	3.12	<.01	2.54	<.01	1.77	<.01
N =		1,279		1,315		1,251		1,272		1,212		1,137	
LR (P-Value)		<.0001		<.0001		<.0001		<.0001		<.0001		<.0001	
Pct. Concordant		82%		83%		82%		82%		81%		77%	
TYEARS <X		X = 3				X = 4				X = 5			

The model is estimated with an intercept industry controls, but the result for these variables are not reported. All reported *P* values are based on a two-tailed test. The SFAS No. 123 adoption-year sample (i.e., 1996/1997) consists of the S&P 500, S&P 400 MidCap, and S&P 600 SmallCap firms covered by the 1996 Execucomp data base that use stock options to compensate employees. For firms required to report under SFAS No. 123 for fiscal 1996 and for firms that early

adopt SFAS No. 123, the adoption year sample reflects data from fiscal 1996. For firms required to adopt in fiscal 1997 (that did not early adopt), the adoption year sample reflects data from fiscal 1997. The 2001 sample consists of all fiscal 2001 Execucomp firms that use stock options to compensate employees with the requisite data.

DISREL is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm's 10K, and zero otherwise. **STDVOL-60M** is the standard deviation of the five annual volatility measure calculated from CRSP monthly stock returns. **STDVOL-12M** is the standard deviation of returns over the 12 months preceding the disavowal year. **TYEARS<3** is a indicator variables set equal to one if the firm has been trading for less than three years, and zero otherwise. In Panel C **TYEARS<X** is a variable set equal to **TYEARS<3** for fiscal 2002, **TYEARS<4** for fiscal 2003, and **TYEARS<5** for fiscal 2004, where **TYEARS<4** (**TYEARS<5**) is an indicator variables set equal to one if the firm has been trading for less than four (five) years, and zero otherwise. **NO_LTOPT** is an indicator variable set equal to one if the firm does not have longer-term, traded, stock options, defined as options based on the firm's stock price with expiration dates at least 365 days from the beginning of the fiscal year. **SOC_PCT** is ratio of SOC granted to the top five executives (Execucomp item **BLK_VALUE**) to the total compensation paid to the top five executives (Execucomp item **TDC1**). **TOP5SO_PCT** is the percentage of implied option expense awarded to the top five highest paid executives (sum of the Black Scholes value of options granted to the each of the five highest paid executives divided by **SOCE**). **XSCOMP** is abnormal total compensation awarded to the top five highest paid executives, where expected compensation is based on an industry-year model of executive compensation. If data for calculating **SOC_PCT**, **TOP5SO_PCT**, or **XSCOMP** is unavailable for all five executives, we calculate the value of the variable for the CEO and assume that the CEO's percentage or abnormal compensation is representative of the entire executive team. **ROA_DIFF** is the difference between ROA based on net income (excluding implied option expense) and ROA based on pro forma income adjusted for SOC expense. **EPS_DIFF** is the reduction in earning per share that would occur if SOC had been recognized (**SOCE/shares outstanding**). **NEW_CEO** is an indicator variables if a new CEO begin his/her tenure during the current year. **AA**, **DT**, **EY**, **KPMG**, and **PWC** are indicator variables for the firm's auditor. Specifically, **AA**, **DT**, **EY**, **KPMG**, and **PWC** are set equal to one if the firm's financial statements were audited by Arthur Anderson, Deloitte and Touche, Ernst and young, KPMG, and PricewaterhouseCoopers, respectively, and zero otherwise. **OPTION_IND** is an indicator variable set equal to one if the firm operates in a Fama and French Industry that falls among the top 20 percent of **SOCE/ASSETS** in fiscal 1996, and zero otherwise. **NAT_AUDITOR** is an indicator variable set equal to one if a national audit, besides Ernst and Young, audits the firm's financial statements, and zero otherwise. **DISAVOW96** is an indicator variables set equal to one if the firm disavowed SOC during the year that the firm first adopted SFAS No. 123, and zero otherwise. **SIZE** and **RET1YR** are the log of the firm's assets and one-year return, respectively.

Table 5
Disavowals and Client Characteristics by Audit Firm

	Arthur Andersen N=496		Deloitte and Touche N=1,428		Ernst and Young N=1,988		KPMG N=1,208		Pricewaterhouse Coopers N=2,015	
	Mean		Mean		Mean		Mean		Mean	
DISREL	0.05	*	0.06	*	0.28		0.06	*	0.08	*
<i>Client Characteristics</i>										
SOCE	124.11		108.93		136.10		301.57		88.41	
BM	0.50		0.51		0.54		0.52		0.46	*
GROWTH	0.16		0.10	*	0.13		0.10	*	0.11	*
<i>Reliability Measures</i>										
STDVOL-60M	0.03	*	0.04	*	0.04		0.04		0.05	*
STDVOL-36M	0.03	*	0.03	*	0.04		0.04		0.04	*
STDVOL-12M	0.01	*	0.01		0.01		0.01		0.01	
TYEARS<3	0.06	*	0.02		0.02		0.04	*	0.04	*
NO_LTOPT	0.90	*	0.70		0.70		0.76	*	0.67	*
<i>Opportunism Controls</i>										
SOC_PCT	0.36		.031	*	0.35		0.35		0.36	
TOP5SO_PCT	0.40	*	0.22	*	0.23		0.21	*	0.22	
XSCOMP	0.01		-0.36	*	-0.09		-0.10		-0.47	
ROA_DIFF	0.03		0.02		0.02		0.03	*	0.03	
EPS_DIFF	0.17	*	0.21	*	0.23		0.25		0.25	*
<i>Reputation Controls</i>										
OPT_IND	0.28		0.30		0.31		.034		0.34	*
NEW_CEO										

The “*” indicates a significant difference at the five percent level between the firm’s average and the average for the corresponding variable for Ernst and Young.

DISREL is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm’s 10K, and zero otherwise. **SOCE** is SOC expense estimated as the difference between reported net income and pro forma income adjusted

for stock option expense (Compustat item #399) divided by $1 - \text{tax rate}$ (35 percent) for firms that do not recognize SOC expense and the sum of implied option expense (as just described) and recognized option expense (Compustat item #398) for firms that do recognize SOC expense. **BM** is the firm's book-to-market ratio. **GROWTH** is annual percentage sales growth. **STDVOL-60M (STDVOL-36M)** is the standard deviation of the five (three) annual volatility measure calculated from CRSP monthly stock returns. **STDVOL-12M** is the standard deviation of monthly volatility over the 12 months preceding the disavowal year, where monthly volatility is calculated from daily returns. **TYEARS<3** is a indicator variables set equal to one if the firm has been trading for less than three years, and zero otherwise. **NO_LTOPT** is an indicator variable set equal to one if the firm does not have longer-term, traded, stock options, defined as options based on the firm's stock price with expiration dates at least 365 days from the beginning of the fiscal year. **SOC_PCT** is ratio of SOC granted to the top five executives (Execucomp item BLK_VALUE) to the total compensation paid to the top five executives (Execucomp item TDC1). **TOP5SO_PCT** is the percentage of implied option expense awarded to the top five highest paid executives (sum of the Black Scholes value of options granted to the each of the five highest paid executives divided by SOCE). **XSCOMP** is abnormal total compensation awarded to the top five highest paid executives, where expected compensation is based on an industry-year model of executive compensation. If data for calculating SOC_PCT, TOP5SO_PCT, or XSCOMP is unavailable for all five executives, we calculate the value of the variable for the CEO and assume that the CEO's percentage or abnormal compensation is representative of the entire executive team. **ROA_DIFF** is the difference between ROA based on net income (excluding implied option expense) and ROA based on pro forma income adjusted for SOC expense. **EPS_DIFF** is the reduction in earning per share that would occur if SOC had been recognized (SOCE/shares outstanding). **OPTION_IND** is an indicator variable set equal to one if the firm operates in a Fama and French Industry that falls among the top 20 percent of SOCE/ASSETS in fiscal 1996, and zero otherwise.

Table 6
Location of Ernst and Young Offices Rendering the Audit Opinion in Fiscal 2001 by DISREL (N = 303)

Auditor Office Region	DISREL = 0	DISREL = 1	Diff <i>P</i>
WEST	18.5%	27%	**
SOUTHWEST	14%	12%	
SOUTHEAST	11%	20%	*
MIDWEST	28%	15%	***
MIDATLANTIC	23%	15%	**
NEWENGLAND	5%	6%	
FOREIGN	.5%	5%	

The data in this table is limited to fiscal 2001 as *Audit Analytics* does not provide audit opinion data prior to fiscal year 2000. This table shows the percentages of Ernst and Young audit opinions for our sample firms by office region and by DISREL. **DISREL** is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm's 10K, and zero otherwise. **WEST, MIDWEST, SOUTHEAST, SOUTHWEST, MIDATLANTIC, NEWENGLAND, and FOREIGN** are indicator variables set equal to one if the Ernst and Young office rendering the audit opinion is located in the WEST, MIDWEST, SOUTHEAST, SOUTHWEST, MIDATLANTIC, NEWENGLAND, and in a country other than the U.S., respectively, and zero otherwise. ***, **, * indicate a significant difference between the non-DISREL percentage and the DISREL percentage at the 1%, 5%, and 10% level, respectively.

Table 7
Logistic Regression Examining Changes in Firm's Disavowal Disclosures from 2002-2005

$$\text{DISREL_CHG}_i = \beta_0 + \beta_1 \text{RELIABILITY_CHG}_i + \beta_2 \text{OPPORTUNISM_CHG}_i + \beta_3 \text{EY_CHG}_i + \beta_4 \text{EXP2002}_i + \beta_5 \text{EXP2003}_i + \beta_6 \text{EXP2004}_i + \varepsilon_i$$

Panel A: Firms initiating a disavowal disclosure strategy

		Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)	
	Pred	Coeff.	P	Coeff.	P	Coeff.	P	Coeff.	P	Coeff.	P
Reliability Measures											
STDVOL-12M_CHG	+	1.20	0.96	-2.53	0.91	-16.22	0.44	-5.02	0.81	-8.45	0.68
VOL 12 M CHG	+							3.18	0.12	3.14	0.12
Opportunism Controls											
SOC_PCT_CHG	+	-0.69	0.24	-0.60	0.32			-0.77	0.20	-0.63	0.30
TOP5SO_PCT CHG	+	-0.04	0.95	-0.15	0.81			0.18	0.76	0.03	0.97
XSCOMP_CHG	+					-0.17	0.07				
ROA_DIFF_CHG	+	-3.76	0.02			-3.71	0.02	-3.60	0.02		
EPS_DIFF_CHG	+			-1.33	0.13					-1.57	0.07
Other Controls											
EY_CHG	+	1.18	0.03	1.20	0.02	1.05	0.08	1.20	0.02	1.24	0.02
EXP 2002	-	-0.09	0.93	-0.09	0.93	0.04	0.97	-0.08	0.94	-0.08	0.94
EXP 2003	-	-1.24	0.09	-1.26	0.08	-1.13	0.12	-1.24	0.09	-1.25	0.08
EXP 2004	-	-13.08	0.99	-13.07	0.99	-13.01	0.99	-13.06	0.99	-13.04	0.99
N =		4,150		4,150		3,805		4,093		4,093	
LR (P-Value)		0.052		0.09		0.04		0.03		0.03	
Pct. Concordant		51%		54%		52%		57%		57%	

Panel B: Firms ceasing a disavowal disclosure strategy

	Pred	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)	
		Coeff.	P	Coeff.	P	Coeff.	P	Coeff.	P	Coeff.	P
Reliability Measures											
STDVOL-12M_CHG	-	4.61	0.74	5.88	0.67	9.63	0.48	4.85	0.72	6.08	0.66
VOL 12 M CHG	-							0.23	0.88	0.21	0.89
Opportunism Controls											
SOC_PCT_CHG	-	-0.36	0.45	-0.44	0.36			-0.37	0.44	-0.44	0.36
TOP5SO_PCT_CHG	-	0.14	0.78	0.18	0.74			0.14	0.78	0.17	0.75
XSCOMP_CHG	-					-0.03	0.65				
ROA_DIFF_CHG	-	7.87	0.05			7.90	0.05	7.86	0.05		
EPS_DIFF_CHG	-			0.65	0.39					0.64	0.40
Other Controls											
EY_CHG	-	-1.05	0.34	-1.07	0.33	-0.97	0.39	-1.03	0.36	-1.05	0.35
EXP 2002	+	0.99	0.16	1.00	0.16	0.98	0.16	0.98	0.16	0.98	0.16
EXP 2003	+	0.97	0.03	0.96	0.03	1.00	0.03	0.96	0.04	0.95	0.04
EXP 2004	+	-12.11	0.98	-12.12	0.98	-12.03	0.98	-12.07	0.98	-12.08	0.98
YEAR	+	0.60	<.01	0.59	<.01	0.58	<.01	0.59	<.01	0.58	<.01
N =		700		700		641		693		693	
LR (P-Value)		<.0001		<.0001		<.0001		<.0001		<.0001	
Pct. Concordant		69%		69%		69%		69%		68%	

The model is estimated with an intercept, but not reported. All reported *P* values are based on a two-tailed test. Panel A includes only firms that could initiate a disavowal strategy (i.e., firms that did not disavow in the previous fiscal year). Panel B includes only firms that could cease a disavowal strategy (i.e., firms that did disavow in the previous fiscal year).

DISREL is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm's 10K, and zero otherwise. **SOC_PCT_CHG** is the change in the current year's SOC_PCT relative to the previous fiscal year, where **SOC_PCT** is ratio of SOC granted to the top five executives (Execucomp item BLK_VALUE) to the total compensation paid to the top five executives (Execucomp item TDC1). **TOP5SO_PCT_CHG** is the change in the current year's TOP5SO_PCT relative to the previous fiscal year, where **TOP5SO_PCT** is the percentage of implied option expense awarded to the top five highest paid executives (sum of the Black Scholes value of options granted to the each of the five highest paid executives divided by SOCE). **XSCOMP_CHG** is the change in the current year's **XSCOMP** relative to the previous fiscal year where **XSCOMP** is abnormal total compensation awarded to the top five highest paid executives, where expected compensation is based on an industry-year model of

total executive compensation. If data for calculating SOC_PCT, TOP5SO_PCT, or XSCOMP is unavailable for all five executives, we calculate the value of the variable for the CEO and assume that the CEO's percentage or abnormal compensation is representative of the entire executive team. **ROA_DIFF** is the difference between ROA based on net income (excluding implied option expense) and ROA based on pro forma income adjusted for SOC expense. **EPS_DIFF** is the reduction in earnings per share that would occur if SOC had been recognized (SOCE/shares outstanding). **ROA_DIFF_CHG** (**EPS_DIFF_CHG**) is the change in the current year's ROA_DIFF (EPS_DIFF) relative to the previous fiscal year. **EY_CHG** is an indicator variable set equal to one if during the current fiscal year the firm switched from some other audit firm to Ernst and Young, and zero otherwise. **EXP 2002**, **EXP 2003**, and **EXP 2004** are indicator variables set equal to one if the firm early adopted SOC expensing in fiscal 2002, 2003 and 2004, respectively, and zero otherwise. **YEAR** is a time-period variable.

Table 8
The Relation between Estimated Volatility of Returns and Future Volatility of Returns by DISREL for the Adoption-Year Sample

$$\text{VOL_ACT}_i = \phi_0 + \phi_1 \text{VOL. EST}_i + \phi_2 \text{VOL. EST}_i * \text{DISREL}_i + \varepsilon_i$$

	Pred. Sign	FUTURE STDRET-12M		FUTURE STDRET-36M		FUTURE STDRET-60M	
		Coeff.	P	Coeff.	P	Coeff.	P
Intercept		0.03	<.0001	0.01	0.04	0.01	0.00
VOL. EST	+	0.024	<.0001	0.10	<.0001	0.12	<.0001
VOL. EST*DISREL	-	0.00	0.92	-0.02	0.13	-0.26	0.09
N		1,456		1,378		1,378	
Adj. R ²		39%		6%		10%	

This table reports results from an OLS regression of the standard deviation of future returns on adoption-year volatility estimates conditional on DISREL. **VOL. ACT** is the standard deviation of future returns over the 12, 36 or 60 months beginning the first month of the fiscal year following the firm's SFAS 123 adoption year. **VOL. ESTIMATE** is an estimate of the firm's 60 month historical volatility calculated as of the firm's SFAS 123 adoption year. For firm's missing historical volatility, we set VOL. ESTIMATE equal to the mean 60 month historical volatility for all Execucomp firms in the same Fama and French industry. **VOL. ESTIMATE*DISREL** is an interaction variable between VOL. ESTIMATE and DISREL. **DISREL** is an indicator variable set equal to one if management includes an explicit statement questioning the reliability of estimated SOC in the stock option footnote of the firm's 10K, and zero otherwise.