

Accounting Accruals and Auditor Reporting Conservatism*

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Abstract

Accounting accruals are managers' subjective estimates of future outcomes and cannot, by definition, be objectively verified by auditors prior to occurrence. This causes audits of high-accrual firms to pose more uncertainty than audits of low-accrual firms because of potential estimation error and a greater chance that high-accrual firms have undetected asset realization and/or going concern problems that are related to the high level of accruals. One way that auditors can compensate for this risk exposure is to lower their threshold for issuing modified audit reports, an action that will increase modified reports and, therefore, lessen the likelihood of failing to issue a modified report when appropriate. We call this auditor reporting conservatism and test if high-accrual firms in the United States are more likely to receive modified audit reports for asset realization uncertainties and going concern problems. Empirical results for a large sample of U.S. publicly listed companies support the hypothesis that auditors are more conservative, that is, more likely to issue both types of modified audit reports for high-accrual firms. Further analyses show that income-increasing accruals are somewhat more likely to result in reporting conservatism than income-decreasing accruals, and that only the Big Six group of auditors show evidence of reporting conservatism. These findings add to our understanding of the audit report formation process and the potentially important role played by accounting accruals in that process.

Condensé

Le problème empirique étudié par les auteurs est le suivant : les produits et les charges constatés par régularisation dans une société augmentent-ils la probabilité que le rapport de vérification soit assorti de restrictions (modifié) en raison soit 1) d'incertitudes importantes, principalement liées à la réalisation d'actifs, soit 2) de problèmes plus graves de continuité de l'exploitation. Les produits et les charges constatés par régularisation sont des estimations subjectives des cadres en ce qui a trait aux résultats futurs et ne peuvent, par définition, être objectivement vérifiés par les vérificateurs avant leur occurrence, ce qui

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fait que lorsque leur somme est élevée, la vérification est davantage sujette à l'incertitude que lorsque leur somme est faible. Cela tient à l'erreur d'estimation potentielle et au fait que les sociétés dont les produits et les charges constatés par régularisation sont élevés risquent davantage de n'avoir pas détecté les problèmes de réalisation et l'actif et (ou) de continuité de l'exploitation liés à ces produits et ces charges élevés. En d'autres termes, plus les résultats déclarés diffèrent des flux monétaires, plus le risque est grand que ces résultats contiennent des erreurs d'estimation non détectées (intentionnelles ou non) et, par conséquent, de possibles erreurs d'évaluation.

La stratégie adoptée par les auteurs pour traiter l'incertitude inhérente aux produits et aux charges constatés par régularisation et l'erreur d'estimation potentielle qui s'y rattache consiste à poser que les vérificateurs seront davantage susceptibles de modifier leurs rapports à l'endroit de sociétés dont les produits et les charges constatés par régularisation sont importants. Cette décision est inspirée de la « prudence du vérificateur », c'est-à-dire sa volonté de compenser son incapacité d'évaluer l'exactitude des sommes comptabilisées comme étant à payer ou à recevoir et les répercussions potentielles de ces sommes sur les problèmes de réalisation des actifs ou de continuité de l'exploitation. Toutes choses étant égales, un rapport de vérification modifié convient peut-être mieux aux sociétés dont les produits et les charges constatés par régularisation sont élevés du fait que ces sociétés risquent davantage des problèmes de réalisation des actifs et, dans des cas extrêmes, des problèmes de continuité de l'exploitation. L'explication est la suivante : les politiques comptables en matière de constatation des produits à recevoir et des charges à payer tiennent compte de la nature des actifs qui donnent souvent lieu à des problèmes de réalisation tels que l'impossibilité de recouvrer certains comptes clients ou les coûts de certains stocks et de certaines immobilisations en raison de leur dépréciation. Les sociétés qui ont des produits et des charges constatés par régularisation élevés sont également plus susceptibles d'éprouver des problèmes de continuité de l'exploitation non diagnostiqués, en raison de l'écart entre leurs flux de trésorerie et leur bénéfice déclaré. Les politiques en ce qui a trait à la constatation des sommes à recevoir et à payer peuvent entraîner la surestimation du bénéfice et fausser les ratios financiers, ce qui risquerait de masquer une détérioration du rendement de l'exploitation signalant de possibles problèmes de continuité de l'exploitation.

Les auteurs testent l'incidence du niveau élevé des produits et des charges constatés par régularisation sur l'opinion des vérificateurs en utilisant le modèle probit de rapport de vérification élaboré par Krishnan (1994) et par Krishnan et Stephens (1995). Ils déterminent, grâce à une analyse empirique, si la probabilité que le vérificateur modifie son opinion diffère selon que les sociétés ont des produits et des charges constatés par régularisation élevés ou faibles, une fois contrôlés les autres facteurs qui influent sur l'opinion du vérificateur. Le rapport de vérification est la variable dépendante de leur analyse. Les auteurs estiment un modèle probit à deux niveaux et un modèle probit ordonné à trois niveaux. Dans le premier cas, ils donnent à la variable dépendante le code 1 pour les opinions modifiées et le code 0 pour les opinions standard sans réserve. Dans le second, ils donnent à la variable dépendante le code 2 pour un rapport évoquant un problème de continuité de l'exploitation, le code 1 pour une opinion modifiée en raison d'incertitudes importantes, et le code 0 pour une opinion standard sans réserve. Les modifications d'opinion dans le cas d'incertitudes importantes découlent principalement d'incertitudes quant à la réalisation d'éléments d'actif associées à la recouvrabilité des valeurs comptabilisées. Les rapports évoquant un problème de continuité de l'exploitation supposent des modifications plus sérieuses que celles qui découlent d'incertitudes importantes dans le modèle probit ordonné à trois niveaux.

Les sociétés sont classées selon que leurs produits et leurs charges constatés par régularisation sont élevés ou faibles, en fonction de trois modèles possibles d'intensité. Dans le premier modèle, les produits et les charges ainsi constatés sont définis comme étant la différence *nette* globale entre le bénéfice et les flux de trésorerie provenant de l'exploitation. Si le bénéfice diminué des flux de trésorerie donne un résultat positif, la somme nette desdits produits et charges est positive (c'est-à-dire qu'elle augmente le bénéfice). Si la soustraction donne un résultat négatif, la somme nette des produits et des charges constatés par régularisation est négative (c'est-à-dire qu'elle diminue le bénéfice). Chaque société est classée selon le résultat net positif ou négatif de la somme des produits et des charges constatés par régularisation. Les observations du côté des résultats positifs sont partagés à la valeur médiane ; les résultats supérieurs à la médiane sont classés comme étant élevés et les résultats inférieurs à la médiane, comme étant faibles. Le même procédé est utilisé pour partager les observations du côté des résultats négatifs. Les valeurs supérieures à la médiane (plus négatives) indiquent quelles sont les sociétés dont le résultat négatif est élevé, et les valeurs inférieures à la médiane (moins négatives) indiquent quelles sont les sociétés dont le résultat négatif est faible. Les tests qui permettent de comparer les sociétés dont le résultat net est élevé aux sociétés dont le résultat net est faible pour les observations dont la valeur nette est positive, et les sociétés dont le résultat net est élevé aux sociétés dont le résultat net est faible pour les observations dont la valeur nette est négative.

Dans le deuxième modèle, la mesure de l'intensité des produits et les charges constatés par régularisation est abordée de façon différente. Plutôt que de faire la sommation desdits produits et charges, l'on utilise les différents composants de ces produits et de ces charges pour les regrouper en composants positifs (ceux qui font en sorte que le bénéfice est supérieur aux flux de trésorerie provenant de l'exploitation) et en composants négatifs (ceux qui font en sorte que le bénéfice est inférieur aux flux de trésorerie provenant de l'exploitation). Ce procédé permet de décomposer le calcul du résultat net des produits et des charges constatés par régularisation utilisé dans le premier modèle et d'obtenir une mesure des composants de ces produits et de ces charges plus précise et distincte selon qu'ils augmentent ou diminuent le bénéfice. Les composants positifs découlent des hausses des comptes d'actif à court terme et des diminutions des comptes de passif à court terme ; les composants négatifs découlent des diminutions des comptes d'actif à court terme et des augmentations des comptes de passif à court terme, ainsi que de l'amortissement et des autres charges à long terme. Les composants positifs et négatifs sont ensuite agrégés pour chaque société. Les observations supérieures à la valeur médiane de la somme des composants positifs correspondent aux sociétés affichant un résultat net positif élevé et les observations inférieures à la médiane correspondent aux sociétés affichant un résultat net positif faible. De façon analogue, les observations supérieures à la valeur médiane de la somme des composants négatifs (plus négatifs) correspondent aux sociétés affichant un résultat net négatif élevé et les observations inférieures à la médiane (moins négatifs) correspondent aux sociétés affichant un résultat net négatif faible. Chaque observation est donc classée de deux façons, d'une part en fonction des composants positifs des produits et des charges constatés par régularisation (élevés ou faibles) et d'autre part en fonction des composants négatifs des produits et des charges constatés par régularisation (élevés ou faibles).

Étant donné qu'il est possible d'augmenter le bénéfice soit en surestimant le résultat net positif des produits et des charges constatés par régularisation, soit en sous-estimant le résultat net négatif des produits et des charges constatés par régularisation, il n'est pas certain que l'incidence directionnelle d'un résultat net ait autant d'importance que l'existence même de produits et de charges constatés par régularisation. Dans le troisième

modèle, la situation est abordée dans cette perspective et l'on élabore une mesure des produits et des charges bruts constatés par régularisation qui équivaut à la sommation des valeurs absolues des différents composants des produits et des charges constatés par régularisation décrits dans le contexte du deuxième modèle. Le raisonnement sous-jacent au troisième modèle veut que la sommation des différents composants des produits et des charges constatés par régularisation, peu importe leur incidence directionnel sur le bénéfice, donne une mesure plus fidèle de l'intensité des produits et des charges constatés par régularisation et de l'incertitude qu'ils supposent. Les observations supérieures à la valeur médiane des produits et des charges bruts constatés par régularisation sont classées comme étant celles des sociétés dont les produits et les charges constatés par régularisation sont élevés et les observations inférieures à la médiane comme étant celles des sociétés dont les produits et les charges constatés par régularisation sont faibles.

Les modèles probit sont estimés à l'aide d'un important échantillon de sociétés des États-Unis prélevé de la base de données *Disclosure Inc.* (CD-ROM Compact D-SEC) pour les exercices 1986–1987. L'échantillon se compose de 2 324 observations d'opinions sans réserve, 127 observations d'opinions modifiées relativement à la réalisation d'actifs et 157 observations modifiées relativement à la continuité de l'exploitation.

Les résultats du modèle probit à deux niveaux (rapport sans réserve contre rapport modifié) indiquent que les sociétés dont l'intensité des produits et des charges constatés par régularisation est élevée sont davantage susceptibles de recevoir des rapports de vérification pour quatre sur cinq des mesures empiriques des sociétés dont les produits et les charges constatés par régularisation sont élevés. Les auteurs calculent également la probabilité marginale qu'une société dont les produits et les charges constatés par régularisation sont élevés reçoive un rapport de vérification modifié. En moyenne, la probabilité double, passant de 4 à 8 pour cent. Les résultats de l'application du modèle probit à trois niveaux corroborent ces constatations et indiquent, de plus, que les sociétés dont les produits et les charges constatés par régularisation sont élevés sont davantage susceptibles de recevoir un rapport de vérification modifié relativement à des incertitudes moins graves quant à la réalisation des actifs de même qu'à des problèmes plus graves de continuité de l'exploitation.

Dans les tests qui précèdent, aucune distinction n'est faite entre les vérificateurs. Toutefois, maints travaux indiquent que les *Six Grands* cabinets comptables à l'échelle internationale (aujourd'hui les *Cinq Grands*) ont la réputation d'être plus expérimentés et de faire un travail de vérification de meilleure qualité. Si tel est le cas, les vérificateurs des *Six Grands* seraient également plus enclins à la prudence dans leurs rapports que les autres vérificateurs, désireux d'éviter la publicité négative et les litiges découlant des incertitudes importantes et (ou) des problèmes de continuité de l'exploitation non déclarés. Les auteurs appliquent encore une fois le modèle probit à deux niveaux afin de déterminer s'il existe des différences dans la prudence exercée par les vérificateurs dans leur rapport selon qu'ils appartiennent ou non aux *Six Grands*. Les résultats de cette nouvelle application révèlent que les vérificateurs des *Six Grands* sont immanquablement prudents dans le cas des sociétés dont les produits et les charges constatés par régularisation sont élevés, tandis que les autres vérificateurs n'affichent généralement pas cette même prudence. Par conséquent, la prudence exercée par les vérificateurs dans leur rapport est régie par l'appartenance aux *Six Grands* cabinets de vérification, dans la présente étude. Cette constatation revête une grande importance du fait qu'elle met au jour l'une des raisons pour lesquelles les vérifications effectuées par les *Six Grands* sont généralement considérées comme étant de meilleure qualité.

Pour résumer, les résultats empiriques de l'étude d'un vaste échantillon de sociétés des États-Unis faisant appel public à l'épargne confirment que les vérificateurs sont plus prudents, c'est-à-dire plus susceptibles de produire des rapports de vérification modifiés relativement à la réalisation des actifs et à la continuité de l'exploitation dans le cas de sociétés dont les produits et les charges constatés par régularisation sont élevés. D'autres analyses montrent que les produits et les charges constatés par régularisation qui augmentent le bénéfice sont légèrement plus susceptibles d'éveiller la prudence chez les vérificateurs que les produits et les charges constatés par régularisation qui diminuent le bénéfice, et que seuls les vérificateurs des Six Grands manifestent de la prudence dans leurs rapports. Ces constatations nous permettent de mieux comprendre le processus d'élaboration du rapport de vérification et le rôle important, peut-être, joué par les produits et les charges constatés par régularisation dans ce processus.

Pour finir, l'étude démontre aussi que les vérificateurs paraissent être en mesure d'élaborer un modèle décisionnel systématique pour la communication des incertitudes importantes et des problèmes de continuité de l'exploitation, contrairement à l'opinion selon laquelle ces éléments sont essentiellement de nature prospective et, par conséquent, ne peuvent être évalués avec une quelconque fiabilité par les vérificateurs. Chose regrettable, depuis l'adoption du SAS 79, en 1996, le vérificateur ne livre plus dans son rapport ni sa propre évaluation ni l'information qu'il possède au sujet de la nature et de l'importance des incertitudes. La décision que l'on a prise d'éliminer les rapports modifiés dans le cas des incertitudes importantes signifie également que les vérificateurs ne disposent plus de cet outil pour gérer le risque et l'incertitude associés aux clients qui ont des niveaux élevés de produits et de charges constatés par régularisation. La situation est la même au Canada où l'on a adopté, en 1980, une règle analogue pour des motifs à peu près semblables.

1. Introduction

The empirical issue examined in this paper is whether accounting accruals increase a firm's likelihood of receiving a modified audit report for either (1) asset realization uncertainties or (2) going concern problems. Accrual-based earnings are more informative to investors than operating cash flows (Dechow 1994; Subramanyam 1996). However, earnings are also inherently more uncertain than cash flows for two important reasons. First, accrual-based earnings involve managerial discretion and incentives exist for opportunistic behavior with respect to accounting policies (Dye and Verrechia 1995; Holthausen, Larcker, and Sloan 1995; Dechow, Sloan, and Sweeney 1996). Second, accruals require managers to subjectively estimate future outcomes that, by definition, cannot be objectively verified by auditors prior to occurrence, such as bad debt and loan loss reserves, depreciation and amortization estimations (expected lives and residual values), warranties, pension costs, leases, contingent liabilities, and adjustments of inventories and fixed assets because of asset impairment (see *Statement on Auditing Standards [SAS] 57* and American Institute of Certified Public Accountants [AICPA] 1988a for a more extensive list). Thus, the more that reported earnings diverge from cash flows, the greater the risk that earnings contain undetected misestimations (intentional or otherwise) and, therefore, potential valuation error.

As a strategy for dealing with the inherent uncertainty and potential estimation error posed by accruals, it is predicted that auditors are more likely to issue modified audit reports for high-accrual firms. We call this "auditor reporting conservatism." Reporting conservatism can be thought of as compensation for the auditor's inability to assess the accuracy of reported accruals, and the potential effect that accruals may have on asset realization and going concern problems. Rationale for this behavior is developed more fully in the next section.

The remainder of the study is organized as follows. The hypothesis to be tested is formally developed in the next section. This is followed by the estimation models to be used and a description of the sample and data. Empirical results are then reported for a large sample of U.S. publicly listed companies. As predicted, we find that auditors of high-accrual firms are more likely to issue modified audit reports for asset realization uncertainties and for going concern problems. Further analysis reveals that reporting conservatism exists only for the well-known Big Six (now Big Five) group of auditors, a result that is consistent with Big Six auditors having greater reputation capital to protect and, therefore, greater incentives for reporting conservatism than other auditors. As a caveat, we note that our study is specific to the U.S. reporting environment, and that Canadian rules do not require auditors to explicitly report on either material uncertainties or going concern problems.¹

2. Accruals uncertainty and modified audit reports

The argument linking auditor reporting conservatism with the uncertainty posed by accruals is developed in this section. Accruals increase inherent audit risk. SAS 47 (AICPA 1983) defines inherent risk as the risk that financial statements contain material misstatements before considering the effect of internal controls, and explicitly states that "accounts consisting of amounts derived from accounting estimates pose greater risk than do accounts consisting of relatively routine, factual data." Misstatements occur from generally accepted accounting principles (GAAP) violations, including the misestimation of accruals, and the auditor is required to issue a qualified or adverse opinion in these circumstances.²

More important, misstatements can also occur when the auditor fails to issue a modified audit report for material uncertainties and going concern problems, in the appropriate circumstances. All things being equal, a modified report is more likely to be appropriate for high-accrual firms because they have greater potential for asset realization problems and, in more extreme cases, going concern problems. The reason is that accrual accounting policies give recognition to the kinds of assets that often develop realization problems, such as the uncollectibility of accounts receivables or cost unrecoverability in assets such as inventories and fixed assets because of asset impairment. In other words, estimation error in accruals can result in the overstatement of assets, which in turn leads to potential asset realization problems. High-accrual firms are also more likely to have undetected going concern problems because of the divergence between cash flows and reported earnings. Accrual policies can overstate earnings and distort financial ratios, thus masking the deteriorating operating performance that signals potential

going concern problems. Largay and Stickney (1980) illustrate this point with the bankruptcy of the discount retailer, W. T. Grant Company. W. T. Grant reported positive accrual-based earnings that masked declining operating performance and a negative cash flow situation for the five years leading up to the firm's bankruptcy in 1976.

Given that it is not possible for auditors to objectively verify accrual estimations, and, therefore, that it is not possible to know with certainty if modified audit reports are appropriate for accrual estimates that potentially affect asset realization or going concern, reporting conservatism is argued to be a rational mechanism through which auditors can achieve a desired level of audit risk for high-accrual clients.³ In other words, auditors can compensate for the intrinsic uncertainty of high-accrual situations by lowering their threshold for issuing modified reports, a strategy that will, *ceteris paribus*, result in more modified reports for asset realization and going concern problems, lessening the likelihood of failing to issue a modified report when appropriate to do so. The *ceteris paribus* conditions in the study are controlled for using factors known to be associated with modified reports as developed in prior studies.

Several recent experimental studies demonstrate the kind of auditor reporting conservatism described above. Davis and Ashton (1997) report that auditors lower the decision threshold for the "substantial doubt" criterion when making a going concern assessment for highly financially distressed companies, in addition to assessing financial distress as high. The joint effect is to modify audit reports more often than if merely assessing financial distress as high. Davis and Ashton (1997) suggest that conservative thresholds are a way for auditors to be prudent and play it safe. The finding in Davis and Ashton 1997 is analogous to our argument that there is a greater conditional probability that auditors will issue modified audit reports for high-accrual firms, even after considering the effects of other factors associated with modified reports (the *ceteris paribus* conditions). A conservative threshold effect is also evident in Hackenbrack and Nelson 1996, in which auditors accepted footnote disclosures as adequate for a potentially uncollectible account receivable if the engagement risk was moderate, but preferred booking the estimate if it was a high-risk engagement. Similarly, Kinney and Nelson (1996) find that in the absence of outcome information (as would be the case with accruals), auditors are more inclined to disclose a contingent loss in a modified audit report, as if they expected the worst *ex ante* (Kinney and Nelson 1996, 294).

Reporting conservatism can protect auditors in the following way. The majority of litigation against auditors occurs with respect to bankruptcies (Palmrose 1987). Carcello and Palmrose (1994) find that modified audit reports issued prior to bankruptcy reduce both the incidence and magnitude of litigation if bankruptcy subsequently occurs.⁴ The main reason is that a modified audit report reduces investor surprise if there is a subsequent bankruptcy, and surprises are more likely to trigger the kind of stock price drop that leads to third-party litigation against auditors. Consistent with this argument, Chen and Church (1996) report that firms have significantly "less negative" stock returns surrounding bankruptcy filings when the auditor had previously issued a modified audit report.

U.S. audit standards for material uncertainties and going concern report modifications

We test for auditor reporting conservatism using a large sample of U.S. companies from the period 1986–87. SAS 2 (AICPA 1974) and SAS 34 (AICPA 1981) regulated U.S. audit reports during this time period, with a modified opinion for material uncertainties (asset realization) representing a less serious modification than one for going concern. The ordered nature of these two audit report modifications is incorporated in the research design through the use of a three-level ordered probit model. In addition, a simpler dichotomous probit model is used, which analyzes the auditor's basic choice of a clean versus modified opinion (combining both types of modifications). While the sample precedes the 1989 implementation of SAS 58 (AICPA 1988b) and SAS 59 (AICPA 1988c), our study is relevant to the SAS 58 and SAS 59 reporting environment because the auditor is still required by these two standards to report on material uncertainties and going concern problems, respectively.⁵

Most recently SAS 79 (AICPA 1995) amends SAS 58 (AICPA 1988b) and eliminates modified reports with respect to material uncertainties for audit reports issued on or after February 29, 1996. Going concern reports are still required by SAS 59 (AICPA 1988c). Auditors are now required under SAS 79 to determine if uncertainties are reported in accordance with generally accepted accounting principles (primarily *Statement of Financial Accounting Standards [SFAS] No. 5* [Financial Accounting Standards Board 1975] and *Statement of Position 94-6* [AICPA 1994]). If they are, then a standard clean opinion is issued; if not, a qualified or adverse opinion is issued for noncompliance with generally accepted accounting principles.

While SAS 79 (AICPA 1995) supersedes SAS 58 (AICPA 1988b), our study is still important for obtaining an historical understanding of auditor reporting practices with respect to material uncertainties, and the empirical question of whether or not auditors systematically used modified audit reports in response to the uncertainties posed by accounting accruals. Our evidence indicates that they did, suggesting that it may have been unwise to eliminate this reporting option since doing so curtails the ability of auditors to manage audit risk through the audit report choice.⁶

In addition to being a vehicle for auditors to manage audit risk, there is also evidence that audit report modifications for material uncertainties convey new information to financial statement users in the sense of having predictive ability (over and above required footnote disclosures) with respect to the future resolution of the uncertainties (Raghunandan 1993). In related research, Bamber and Stratton (1997) report an experiment in which modified reports for material uncertainties affected bank loan officers risk assessment, interest rate premium, and loan decisions. Based on the experiment, Bamber and Stratton conclude that modified reports convey additional information to users and that the elimination by SAS 79 (AICPA 1995) was, therefore, a questionable step.

3. Empirical method

We test the effect of accruals on the audit opinion based on the probit model of auditor reporting developed in Krishnan 1994 and Krishnan and Stephens 1995.⁷ These two studies investigate auditor reporting conservatism in the context of auditor switches.⁸ In contrast we examine companies not switching auditors. Our empirical analysis determines if, in an ongoing engagement setting, the auditor's likelihood of issuing a modified opinion differs for high-accrual and low-accrual firms, after controlling for other factors that affect the audit opinion choice.

The audit report is the dependent variable in our analysis. We estimate two-level probit and three-level ordered probit models. For the two-level probit model, the dependent variable is coded one for modified opinions and zero for standard clean opinions.⁹ For the three-level ordered probit model, the dependent variable is coded two for going concern reports, one for modified opinions due to material uncertainties, and zero for standard clean opinions. Modifications for material uncertainties primarily arise from asset realization uncertainties associated with recoverability of reported book values.¹⁰

Three models of accruals intensity

Firms are characterized as high- and low-accrual firms using three alternative models of accruals intensity. Model 1 defines accruals as the net overall difference between income and cash flow from operations, with a separate metric for those firms with positive net accruals and for those firms with negative net accruals.¹¹ If income minus cash flow is a positive number, then net accruals are positive or income increasing. If income minus cash flow is a negative number, then net accruals are negative or income decreasing. Each firm is classified as either a "positive net accrual" or a "negative net accrual" firm. The rationale for Model 1 is that it explicitly recognizes the offsetting nature of the individual components of accruals and measures the net directional effect of accruals on income. Intuitively, the uncertainty posed by a net accrual position that is income increasing might be of greater concern to the auditor. However, it should also be noted that income can be increased either by understating a negative accrual, such as depreciation expense, or by overstating a positive accrual, such as accrued credit sales. Observations having positive net accruals are split at the median value; those above the median are classified as high positive-accrual firms and those below the median as low positive-accrual firms. The same procedure is followed for observations having negative net accruals. Values above the median (more negative) are used to classify observations as high negative-accrual firms and below the median (less negative) as low negative-accrual firms. The tests compare high-accrual versus low-accrual firms for observations with positive net accruals, and high-accrual versus low-accrual firms for observations with negative net accruals.

Model 2 approaches the measurement of accruals intensity somewhat differently. Rather than netting accruals, Model 2 uses the individual components of accruals and classifies them into positive components (those which cause

income to be greater than cash flow from operations) and negative components (those which cause income to be less than cash flow from operations). This procedure disaggregates the net accrual calculation used in Model 1 and results in a finer measurement of the separate income-increasing and income-decreasing components of accruals. The rationale for Model 2 is that the netting of accruals (as occurs in Model 1) can obscure the importance of the separate components of accruals, particularly in terms of the directional effects on income. Based on financial statement disclosures, the following individual components of accruals are identified: (1) changes in accounts receivable, (2) changes in inventory, (3) changes in other current assets, (4) changes in accounts payable, (5) changes in taxes payable, (6) changes in other current liabilities, and (7) depreciation and other long-term charges. Positive components occur from increases in current asset accounts and decreases in current liability accounts; and negative components occur from decreases in current asset accounts, increases in current liability accounts, and from depreciation and other long-term charges. The positive and negative components are then aggregated for each firm. Observations above the median value of aggregate positive components are classified as high positive-accrual firms and those below the median as low positive-accrual firms. Similarly, observations above the median value of aggregate negative components (more negative) are classified as high negative-accrual firms and those below the median (less negative) as low negative-accrual firms. Each observation is thus classified in two ways, one with respect to its positive components of accruals (high or low), and one with respect to its negative components of accruals (high or low).

As noted above, since income could potentially be increased either by overstating a positive (income-increasing) accrual or by understating a negative (income-decreasing) accrual, it is not obvious that the directional effect of an accrual matters so much as the existence of an accrual, per se. Model 3 adopts this perspective and constructs a measure of gross accruals that is the summation of the absolute values of the seven individual components of accruals described above in Model 2. The rationale for Model 3 is that the summation of the individual components of accruals, irrespective of their directional effect on income, is a better measure of accruals intensity and the uncertainty posed by accruals.¹² Observations above the median value of gross accruals are classified as high-accrual firms and those below the median as low-accrual firms.

Accruals in each of the above three models are tested using two different definitions of accruals. The first definition is based on total accruals and includes the components of accruals discussed above. The second approach is more restrictive and defines accruals as short-term accruals, such as those accruals generated only from working capital accounts, which excludes the components for depreciation and other long-term charges. The rationale for the second approach is premised on the notion that accruals uncertainty is greatest with respect to short-term accruals. Since the results are qualitatively the same for short-term and total accruals, we only report the results based on total accruals.¹³

Two-level probit models

The audit report formation process is modeled in the following manner. Audit reports are based on an assessment of the client's condition, y^* , which, in turn, is a function of a set of observed variables W and a random error ε .

$$y^* = W\alpha + \varepsilon. \quad (1)$$

The auditor issues a modified opinion if $y^* > 0$ and a standard clean opinion if $y^* \leq 0$. Assuming ε has a standard normal distribution, the above decision process defines a probit model. The independent variables (W) comprise the following: (i) a vector X (described later in this section) consisting of variables that measure client characteristics and that have been associated with modified audit reports in prior studies, and (ii) accruals variables that measure the accruals intensity of companies.

The accruals variables are different for Models 1, 2, and 3. For Model 1, there are three accruals variables: (i) *HPOSN* coded one for firms with high positive net accruals, zero otherwise; (ii) *LPOSN*, coded one for firms with low positive net accruals, zero otherwise; and (iii) *HNEGN*, coded one for firms with high negative net accruals, zero otherwise. The fourth category, firms with low negative net accruals, is implicitly captured in the intercept term. The probit model is formally specified as follows:

$$PQ_i = F(X\beta + \gamma_{HPN} HPOSN + \gamma_{LPN} LPOSN + \gamma_{HNN} HNEGN), \quad (2)$$

where PQ_i is the probability that firm i receives a modified opinion, and $F(\cdot)$ is the distribution of the standard normal variable. The difference in the coefficients of *HPOSN* and *LPOSN* ($\gamma_{HPN} - \gamma_{LPN}$) measures the differential treatment in the audit report decision of high and low positive net accrual firms. The coefficient for *HNEGN* (γ_{HNN}) measures the difference in the treatment of high and low negative net accrual firms. Positive signs are predicted for $(\gamma_{HPN} - \gamma_{LPN})$ and γ_{HNN} .¹⁴

Model 2 uses the following accruals variables: (i) *HPOSC*, coded one for a firm with high positive components of accruals and coded zero for a firm with low positive components of accruals, and (ii) *HNEGC*, coded one for a firm with high negative components of accruals and coded zero for a firm with low negative components of accruals. Recall that, in Model 2, each observation's accruals intensity is measured with respect to both the aggregate positive components and the aggregate negative components of accruals. Thus, it is possible for an observation to have both *HPOSC* and *HNEGC* coded one. The probit model is:

$$PQ_i = F(X\beta + \gamma_{HPC} HPOSC + \gamma_{HNC} HNEGC). \quad (3)$$

The coefficients of *HPOSC* and *HNEGC* capture the differential treatment of firms with high (relative to low) positive and negative components of accruals, respectively. Positive signs are predicted for γ_{HPC} and γ_{HNC} .

Model 3 uses the accrual variable *HGROSS*, which is coded one for firms with high gross accruals and zero for firms with low gross accruals. The coefficient for *HGROSS* represents the difference in auditor treatment of firms with high gross accruals and those with low gross accruals with respect to the issuance of a modified opinion. The probit model is:

$$PQ_i = F(X\beta + \gamma_{HG} HGROSS). \quad (4)$$

Once again, we predict a positive sign for γ_{HG} .

The term *X* represents a vector of observed firm characteristics and includes the variables used in Krishnan 1994 and Krishnan and Stephens 1995 to measure client-specific financial and market risk factors. Krishnan (1994) validates the model by first estimating the model on 1986–87 data and then using model predictions on a holdout sample of 1988 data. Ratios of inventory and receivables to total assets (*I/A* and *R/A*) measure the client's asset composition with respect to these two high-risk accounts. The liabilities to assets ratio (*L/A*) measures potential financial stress relating to debt servicing. Additional financial stress measures are firm size, measured as log of assets (*LASSET*), and an indicator variable if current period net income is negative (*LOSS*). Three market-based measures of firm risk are also included in the model: beta (*BETA*), the residual standard deviation of returns (*SDRET*), and *RET-MRET*, which measures the firm's stock returns minus average market returns.

Except for firm size (*LASSET*) and *RET-MRET*, all of the above variables are expected to have a positive association with modified opinions since they represent increasingly riskier client conditions because of asset composition (more receivables and inventory), financial structure (more debt), operating performance (more losses), and market-based measures of firm risk (more risk). *LASSET* is expected to have a negative association with modified opinions, because firm size is generally positively associated with the financial health of the firm (Krishnan 1994; Dopuch, Holthausen, and Leftwich 1987). *RET-MRET* is also expected to have a negative association with modified opinions, because auditors are likely to interpret higher returns relative to the market as positive information about the client's condition (Dopuch et al. 1987). The *X* vector also includes controls for time listed on an exchange (*TIME*), which measures firm maturity, industry sector (*AGRIMIN*, *CONSTR*, *MANUF*, *TRANSP*, *WHOLE*, *RETAIL*), which controls for interindustry differences, and an indicator variable for year (*Y87*) to control for any year-specific effects since the sample is from both 1986 and 1987. No directional signs are predicted for this last set of control variables.

Three-level ordered probit models

The three-level ordered probit model extends the probit model to accommodate the ordered nature of the dependent variable and includes, in addition to the coefficient vector, two thresholds indicating cutoffs for the issuance of the two modified opinions (see McKelvey and Zavoina 1975 for a description of the ordered probit model). We modify this basic model to incorporate auditor treatment of high- and low-accrual firms into the thresholds, instead of including the accruals variables

in the coefficient vector as in the two-level probit models. The advantage of such an approach is that it allows us to examine possible differences in auditor treatment of relatively less serious modifications for asset realization uncertainties versus more serious going-concern modifications.

The client's condition is given by $z^* = X\beta + \varepsilon$, where X is a vector of observed client characteristics and ε is a random error term. Denoting threshold values by μ_1 and μ_2 , a client's condition would warrant a standard clean opinion if z^* is less than μ_1 , a modification for material uncertainties if z^* is in the range $\{\mu_1, \mu_2\}$, and a going concern modification if z^* is greater than μ_2 . We now expand this model by estimating different thresholds for high- and low-accrual firms, indicating possible differential treatment of these firms in the audit report decision process. For Model 1, the thresholds μ_1 and μ_2 can then be written as:

$$\mu_1 = \mu_{11} + \mu_{1HPN} HPOSN + \mu_{1LPN} LPOSN + \mu_{1HNN} HNEG N \quad (5)$$

$$\mu_2 = \mu_{21} + \mu_{2HPN} HPOSN + \mu_{2LPN} LPOSN + \mu_{2HNN} HNEG N$$

Any differential treatment by auditors of clients with high positive net accruals relative to low positive net accruals would be captured by $\{\mu_{1HPN} - \mu_{1LPN}, \mu_{2HPN} - \mu_{2LPN}\}$ and of high negative net accruals relative to low negative net accruals by $\{\mu_{1HNN}, \mu_{2HNN}\}$. The model can be estimated by maximum likelihood techniques. Identification of parameters requires that one coefficient be set equal to zero. Without loss of generality, μ_{11} is set to zero. If auditors treat clients with high positive net accruals more conservatively than clients with low positive net accruals, then high positive net accrual firms would have lower threshold estimates than low positive net accrual firms: $\mu_{1HPN} - \mu_{1LPN} < 0$ and $\mu_{2HPN} - \mu_{2LPN} < 0$. Likewise, if auditors treat clients with high negative net accruals more conservatively than clients with low negative net accruals, then high negative net accrual firms would have lower threshold estimates than low negative net accrual firms: $\mu_{1HNN} < 0$ and $\mu_{2HNN} < 0$.

For the accruals variables defined by Models 2 and 3, the tests are similar. For Model 2, the thresholds are

$$\mu_1 = \mu_{11} + \mu_{1HPC} HPOSC + \mu_{1HNC} HNEGC \quad (6)$$

$$\mu_2 = \mu_{21} + \mu_{2HPC} HPOSC + \mu_{2HNC} HNEGC$$

Our hypothesis predicts that $\mu_{1HPC} < 0$, $\mu_{2HPC} < 0$, $\mu_{1HNC} < 0$, and $\mu_{2HNC} < 0$.

For Model 3 the thresholds are

$$\mu_1 = \mu_{11} + \mu_{1HG} HGROSS \quad (7)$$

$$\mu_2 = \mu_{21} + \mu_{2HG} HGROSS$$

Our hypothesis predicts that $\mu_{1HG} < 0$, $\mu_{2HG} < 0$.

Sample and data

The models are estimated on a sample of publicly listed U.S. companies using data from Krishnan 1994. Krishnan (1994) analyzes the audit modification decision for a sample of 2,989 nonfinancial observations from the *Disclosure Inc.* (Compact D-Securities and Exchange Commission [SEC] CD-ROM) database for fiscal years 1986–87 having complete data on the model variables and with necessary data from the Center for Research in Security Prices (CRSP) tapes to compute the market risk variables.¹⁵ For our study, we eliminated 197 observations from the Krishnan 1994 sample that changed auditors leaving a potential sample of 2,792 observations. Data availability for the accruals variables further reduced the sample, resulting in a final sample of 2,608 observations. The sample is well diversified across 60 different two-digit Standard Industrial Classification (SIC) industries, with no industry having more than 12 percent. About 60 percent of the sample observations are National Association of Securities Dealers Automated Quotations (NASDAQ) firms, and 40 percent are listed on the American and New York stock exchanges. The sample has 68 percent of its observations from 1987 and 32 percent from 1986.¹⁶

Table 1 reports descriptive statistics for all variables used in the study.¹⁷ All five accruals variables are scaled by sales to measure firm-specific income statement effects. Sales are better for this purpose than earnings because earnings contain the combined effect of all accruals. Sales are also more directly related to earnings than other size scalars such as total assets. A total of 41 percent of the sample have positive net accruals (*POSN*), with a median of 0.082, and 59 percent of the sample have negative net accruals (*NEGN*), with a median of -0.086 . The positive components of accruals (*POSC*) have a median of 0.087, while the negative components (*NEGC*) have a median of -0.109 . Gross accruals (*GROSS*) are the sum of the absolute value of all components of accruals and have a median of 0.218. It is clear from this data that accruals are large relative to sales for all of the accruals variables. The means are even larger than the median values, suggesting that some extreme values exist. In examining the upper and lower quartiles in Table 1, the range is quite large, with the upper quartile representing 4 to 5 times the value of the lower quartile. With cross-sectional differences in accruals of this magnitude, it is easy to understand how accruals of high-accrual firms can create substantial uncertainty and lead to the kind of auditor reporting conservatism hypothesized in the study.

Table 2 presents the distribution of audit opinions for our sample partitioned into high- and low-accrual firms based on median values for each of the five accruals variables. We formally test if the means are different between the two partitions (high and low) and find that mean values for high-accrual firms are significantly greater than those for low-accrual firms for all of the accruals variables ($p < 0.0001$). This result gives us confidence that the partitions result in a clear distinction between firms with high and low levels of accruals.

We also report in Table 2 the percentage of clean and modified opinions received by high- and low-accrual firms for each of the five accruals variables. Using a *chi-squared* test, a null hypothesis of no difference in audit report distributions

TABLE 1
Descriptive statistics, $n = 2,608$ observations

Variables	Mean	Std. Dev.	Lower quartile	Median	Upper quartile
<i>L/A</i>	0.531	0.509	0.325	0.529	0.662
<i>R/A</i>	0.177	0.137	0.071	0.154	0.254
<i>I/A</i>	0.156	0.157	0.020	0.119	0.253
<i>LOSS</i>	0.339	0.473	—	—	—
<i>LASSET</i>	4.130	2.330	2.444	3.854	5.625
<i>BETA</i>	1.115	0.753	0.633	1.048	1.543
<i>SDRET</i>	0.034	0.019	0.021	0.031	0.043
<i>RET-MRET</i>	-0.002	0.227	-0.115	-0.003	0.101
<i>TIME</i>	8.959	8.726	1.754	3.990	14.892
<i>AGRIMIN</i>	0.061	0.240	—	—	—
<i>CONSTR</i>	0.015	0.121	—	—	—
<i>MANUF</i>	0.477	0.500	—	—	—
<i>TRANSP</i>	0.130	0.336	—	—	—
<i>WHOLE</i>	0.054	0.225	—	—	—
<i>RETAIL</i>	0.064	0.246	—	—	—
<i>Y87</i>	0.683	0.465	—	—	—
Accruals variables					
<i>POSN</i> ($n = 1,068$)	0.322	1.849	0.034	0.082	0.175
<i>NEGN</i> ($n = 1,540$)	-0.701	7.760	-0.208	-0.086	-0.035
<i>POSC</i>	0.481	5.163	0.041	0.087	0.190
<i>NEGC</i>	-0.763	7.896	-0.226	-0.109	-0.057
<i>GROSS</i>	1.247	11.867	0.130	0.218	0.424

Notes:

- L/A* = total liabilities/total assets.
R/A = receivables/total assets.
I/A = inventory/total assets.
LOSS = one if net income is negative, zero otherwise.
LASSET = natural logarithm of book value of total assets (\$ millions) at the fiscal year end deflated by implicit price deflator for GNP.
*BETA** = beta, the slope coefficient from the market model regression.
*SDRET** = residual standard deviation of returns from market model regression.
*RET-MRET** = common stock returns (including dividends) minus equally weighted market return (%).
TIME = years listed on NYSE, AMEX or NASDAQ.
AGRIMIN = one for SIC codes 100-1499, zero otherwise.
CONSTR = one for SIC codes 1500-1999, zero otherwise.
MANUF = one for SIC codes 2000-3999, zero otherwise.
TRANSP = one for SIC codes 4000-4999, zero otherwise.
WHOLE = one for SIC codes 5000-5199, zero otherwise.
RETAIL = one for SIC codes 5200-5999, zero otherwise.
Y87 = one if observation belongs to year 1987, zero otherwise.

TABLE 1 (continued)

<i>POSN</i>	= positive net accruals (computed for 1,068 observations for which net accruals are positive) where accruals are the sum of (i) change in accounts receivables, (ii) change in inventories, (iii) change in other current assets, (iv) (minus) change in accounts payable, (v) (minus) change in taxes payable, (vi) (minus) change in other current liabilities, (vii) (minus) depreciation and other long-term charges.
<i>NEGN</i>	= negative net accruals (computed for 1,540 observations for which net accruals are negative) where accruals are the sum of (i) through (vii) defined under <i>POSN</i> .
<i>POSC</i>	= the sum of all positive components in (i) through (vii) defined under <i>POSN</i> . Positive components are positive changes in current assets and negative changes in current liabilities.
<i>NEGC</i>	= the sum of all negative components in (i) through (vii) defined under <i>POSN</i> . Negative components are negative changes in current assets and positive changes in current liabilities, and depreciation/other long-term charges.
<i>GROSS</i>	= gross accruals, the sum of the absolute values of (i) through (vii) defined under <i>POSN</i> .
*	<i>BETA</i> , <i>SDRET</i> , and <i>RET-MRET</i> (average) were calculated for 260 trading days prior to year end. Observations were eliminated if there were fewer than 70 trading days.

between high- and low-accrual firms is rejected at $p < 0.0001$ for all five accruals variables. Low-accrual firms received modified reports only 5 percent to 8 percent of the time. By contrast, high-accrual firms received modified reports 12 percent to 20 percent of the time. The magnitude of these differences range from 6 percent to 15 percent, depending on the particular accrual variable.

Table 2 offers preliminary evidence that auditors are two to three times more likely to modify the audit report of high-accrual firms. However, these univariate tests do not control for other factors in the probit models that could also potentially affect the audit report choice. Finally, Table 2 shows that negative net accrual (*NEGN*) firms are more likely to receive a modified report ($193/1540 = 12.5$ percent) than positive net accrual (*POSN*) firms ($91/1068 = 8.5$ percent). While this seems counterintuitive in the sense that one might expect auditors to be more concerned with income-increasing accruals, it nevertheless makes sense because Table 1 shows that the mean of *NEGN* is much larger relative to sales than the mean of *POSN* (i.e., -0.701 versus 0.322), and, therefore, of potentially greater impact on earnings. As stated before, income can be increased either through the understatement of negative accruals or the overstatement of positive accruals.

4. Empirical results

Baseline probit estimates (before the effect of the accruals variables)

Table 3 reports the baseline two-level probit and three-level ordered probit models prior to testing the effect of accruals intensity. The model *chi*-squared indicates the overall fit of the model and is significant at $p < 0.0001$ for both models. In addition to coefficient parameters for the independent variables, the three-level ordered probit includes two thresholds, one normalized to zero. The second threshold, μ_2 ,

TABLE 2

Descriptive statistics for accruals measures and distribution of types of audit opinions across high-accrual and low-accrual firms

	Accruals		Audit opinions			
	Mean		Clean		Modified	
	High-*	Low-*	High-*	Low-*	High-*	Low-*
	Accrual	Accrual	Accrual	Accrual	Accrual	Accrual
	Firms	Firms	Firms	Firms	Firms	Firms
Accruals variables [†]						
Positive net accruals (<i>POSN</i>)	0.607	0.037	470 (88.0%)	507 (94.9%)	64 (12.0%)	27 (5.1%)
Negative net accruals (<i>NEGN</i>)	-1.366	-0.037	616 (80.0%)	731 (95.0%)	154 (20.0%)	39 (5.0%)
Positive component (<i>POSC</i>)	0.920	0.041	1125 (86.3%)	1199 (92.0%)	179 (13.7%)	105 (8.0%)
Negative component (<i>NEGC</i>)	-1.470	-0.057	1096 (84.0%)	1228 (94.2%)	208 (16.0%)	76 (5.8%)
Gross accruals (<i>GROSS</i>)	2.362	0.131	1080 (82.8%)	1244 (95.4%)	224 (17.2%)	60 (4.6%)

Notes:

* High-accrual firms are those with accruals above the median and low-accrual firms are those with accruals below the median. The *t*-test for the null hypothesis that the means of high and low accruals firms are not different is rejected (p -value < 0.0001) in all cases. The *chi*-squared test for the null hypothesis that there is no relationship between high and low accruals and the audit opinion is rejected (p < 0.0001) in all cases.

[†] See Table 1 for definitions of accruals variables.

is significant at $p < 0.01$, indicating that the three-level ordered dependent variable is an appropriate way to empirically model the audit report. Model R^2 is also slightly higher for the ordered probit compared with the probit, indicating better explanatory power for the former. Coefficient estimates are generally similar for the two models. Consistent with previous work, the liabilities/assets ratio, the incidence of loss, and the residual standard deviation of returns have a positive effect on the probability of a modified opinion. As predicted, larger firms are less likely than smaller firms to be issued a modified report, and firms with greater stock returns relative to the market are also less likely to receive a modified report. The receivables/assets ratio has a sign opposite to that predicted for the variable,

a result which has also been reported by Dopuch et al. 1987, Krishnan 1994, and Krishnan and Stephens 1995.

Two-level probit estimates

The two-level probit models in Table 3 are re-estimated to incorporate variables using the three models of accruals intensity and are reported in Table 4. Recall that accruals Model 1 uses overall net accruals, Model 2 uses the separate positive and negative components of accruals, and Model 3 sums the absolute values of positive and negative components to derive a measure of gross accruals. The accruals variables are the only ones reported in Table 4 as the coefficient estimates of other variables are largely unchanged from Table 3.

Four of the five accruals variables reported in Table 4 are positive and significant ($p < 0.05$). The only measure of accruals intensity that is not significant is the test of high negative components versus low negative components of accruals in Model 2. The insignificant result on the negative component of accruals provides some support for the intuitive argument that auditors may be more concerned with positive (income-increasing) accruals than with negative (income-decreasing) accruals. However, there is also counter evidence of this because Model 1 shows that firms with high levels of overall negative net accruals are more likely to receive a modified opinion than firms with low levels of overall negative net accruals. In summary, the two-level probit results in Table 4 suggest that auditors of high-accrual firms issue more modified audit reports. There is also some evidence that this effect is stronger for income-increasing accruals.

To assess the magnitude of the effect in Table 4, we calculated the incremental probability of an average firm with high accruals receiving a modified audit report compared to an average firm with low accruals. Mean values are used for all control variables in the X vector to construct a hypothetical average firm in the sample. The incremental probability of a report modification is then computed by setting the appropriate high-accrual variables equal to one, and comparing to the probability when the high-accrual variables are set to zero. When accruals are defined as total accruals, the probabilities increase as follows: an increase from 4.9 percent to 8.7 percent for high overall positive net accrual firms; an increase from 3.9 percent to 7.9 percent for high overall negative net accrual firms; an increase from 4.7 percent to 7.6 percent for high positive components of accruals; an increase from 4.7 percent to 4.9 percent for high negative components of accruals; and an increase from 3.8 percent to 9.0 percent for high gross accruals. With the exception of high negative components of accruals, the average effect of high accruals is to approximately double the likelihood of receiving a modified audit report, which is comparable to the descriptive statistics reported in Table 2.

Three-level ordered probit estimates

We re-estimate the three-level ordered probit model in Table 3 to determine if the thresholds for each of the two audit report modifications differ across subsets of observations having high and low levels of accruals. The prediction is that threshold values are lower for high-accrual firms than for low-accrual firms, which means

TABLE 3
Baseline probit and ordered probit estimates

Variable	Expected sign	Probit		Ordered probit	
		Parameter estimate	<i>t</i> -statistic	Parameter estimate	<i>t</i> -statistic
Variable					
Constant		-1.605	-8.946	-1.630	-9.218
<i>L/A</i>	+	0.205	4.159*	0.240	9.023*
<i>R/A</i>	+	-1.236	-3.634	-1.125	-3.678
<i>I/A</i>	+	0.117	0.377	0.178	0.581
<i>LOSS</i>	+	0.682	7.553*	0.753	7.103*
<i>LASSET</i>	-	-0.136	-5.406*	-0.155	-6.263*
<i>BETA</i>	+	-0.043	-0.866	-0.024	-0.513
<i>SDRET</i>	+	11.341	5.253*	10.753	4.768*
<i>RET-MRET</i>	-	-0.680	-4.442*	-0.745	-5.218*
<i>TIME</i>	±	0.032	5.161*	0.032	4.711*
<i>AGRIMIN</i>	±	-0.016	-0.099	-0.024	-0.141
<i>CONSTR</i>	±	-0.075	-0.221	-0.011	-0.034
<i>MANUF</i>	±	-0.167	-1.456	-0.141	-1.235
<i>TRANSP</i>	±	0.620	4.634*	0.669	4.798*
<i>WHOLE</i>	±	-0.125	-0.623	-0.154	-0.708
<i>RETAIL</i>	±	-0.860	-3.062*	-0.811	-2.737*
<i>Y87</i>	±	-0.110	-1.370	-0.113	-1.426
Threshold					
μ_1				0.000	0.000
μ_2	+			0.429	9.375*
Model χ^2		394.980		450.152	
<i>p</i> -value		0.000		0.000	
Pseudo R^2		0.347		0.371	
<i>n</i>		2,608		2,608	

Notes:

The dependent variable for probit is coded zero for clean opinions and one for asset realization and going concern opinions. The dependent variable for ordered probit is coded zero for clean opinions, one for asset realization opinions, and two for going concern opinions. The sample breakdown is 2,324 clean opinions, 127 asset realization opinions, and 157 going concern opinions. μ_1 and μ_2 are first (normalized to zero) and second thresholds respectively for the ordered probit. See Table 1 for definitions of variables.

* Significant at 1 percent level (one-tailed where signs are expected, two-tailed otherwise).

TABLE 4
Probit estimates for accruals variables

	Expected Sign	Parameter Estimate	<i>t</i> -statistic
Model 1: Total net accruals			
<i>HPOSN-LPOSN</i>	+	0.288	2.182 [†]
<i>HNEGN</i>	+	0.347	3.142*
Model 2: Positive/negative components			
<i>HPOSC</i>	+	0.240	3.036*
<i>HNEGC</i>	+	0.023	0.250
Model 3: Gross accruals			
<i>HGROSS</i>	+	0.437	4.791*

Notes:

The dependent variable is coded zero for clean opinions and one for asset realization and going concern opinions. In addition to the variables reported, the model includes the variables shown in Table 3. The sample breakdown is 2,324 for clean opinions and 284 for asset realization and going concern opinions.

In the definitions below, high-accrual firms are those with accruals (scaled by sales) above the median of the particular accrual measure specified, and low-accrual firms are those with accruals (scaled by sales) below the median of the particular accrual measure specified. See Table 1 for definitions of accruals variables.

- HPOSN* = one if high positive net accruals, zero otherwise.
LPOSN = one if low positive net accruals, zero otherwise.
HNEGN = one if high negative net accruals, zero otherwise.
HPOSC = one if high positive accruals components, zero otherwise.
HNEGC = one if high negative accruals components, zero otherwise.
HGROSS = one if high gross accruals, zero otherwise.

* Significant at 1 percent level (one-tailed).

† Significant at 5 percent level (one-tailed).

that modifications occur more often *ceteris paribus* after controlling for the effects of the other model variables reported in Table 3. The test statistics are based on threshold differences between low-accrual firms and high-accrual firms, and a negative sign is expected if high-accrual firms have lower thresholds.

Table 5 reports the results for the test of the three-level ordered probit models and provides evidence that auditors are more conservative with respect to high-accrual firms for both levels of audit report modifications. In the first reporting threshold (asset realization uncertainty), auditors are more conservative for high-accrual firms for four of the five accruals variables tested ($p < 0.05$). The only exception is Model 2, in which there is no difference between firms with high negative versus low negative components of accruals. In the second reporting threshold (going concern), auditors are more conservative for high-accrual firms for four of the five accruals variables tested ($p < 0.05$). The only exception occurs in Model 1, when overall net accruals are positive.

TABLE 5
Ordered probit estimates for accruals variables

	Expected Sign	Parameter Estimate	t-statistic
Model 1: Total net accruals			
First threshold			
<i>HPOSN-LPOSN</i>	-	-0.298	-2.253 [†]
<i>HNEGN</i>	-	-0.334	-2.987*
Second threshold			
<i>HPOSN-LPOSN</i>	-	-0.124	-0.610
<i>HNEGN</i>	-	-0.420	-2.877*
Model 2: Positive/negative components			
First threshold			
<i>HPOSC</i>	-	-0.246	-3.039*
<i>HNEGC</i>	-	0.003	0.031
Second threshold			
<i>HPOSC</i>	-	-0.260	-2.451*
<i>HNEGC</i>	-	-0.432	-2.996*
Model 3: Gross accruals			
First threshold			
<i>HGROSS</i>	-	-0.421	-4.490*
Second threshold			
<i>HGROSS</i>	-	-0.651	-4.415*

Notes:

The dependent variable is coded zero for clean opinions, one for asset realization opinions, and two for going concern opinions. In addition to the variables reported, the model includes the variables shown in Table 3. The sample breakdown is 2,324 for clean opinions, 127 for asset realization opinions, and 157 for going concern opinions.

In the definitions below, high-accrual firms are those with accruals (scaled by sales) above the median of the particular accrual measure specified and low-accrual firms are those with accruals (scaled by sales) below the median of the particular accrual measure specified. See Table 1 for definitions of accruals variables.

HPOSN = one if high positive net accruals, zero otherwise.

LPOSN = one if low positive net accruals, zero otherwise.

HNEGN = one if high negative net accruals, zero otherwise.

HPOSC = one if high positive accruals components, zero otherwise.

HNEGC = one if high negative accruals components, zero otherwise.

HGROSS = one if high gross accruals, zero otherwise.

* Significant at 1 percent level (one-tailed).

† Significant at 5 percent level (one-tailed).

To summarize, the three-level ordered probit results indicate an association between high accruals and auditor reporting conservatism for both levels of modifications. There is also broad consistency between the two levels of report modifications. The only differences are (1) in Model 1, both accruals variables are significant for the first threshold, while only the negative net accrual variable is significant for the second threshold, and (2) in Model 2, both accruals variables are significant for the second threshold, while only the positive component of accruals is significant for the first threshold.

As with the two-level probit results in Table 4, the evidence on negative accruals is mixed and less consistently supportive of auditor reporting conservatism than the evidence on positive accruals. Specifically, in Model 2, the negative component of accruals is not significant for the first threshold, though they are significant for the second threshold. However, as in the two-level probit estimations, overall negative net accruals (Model 1) are significant in all tests, which provides counter evidence that negative accruals also affect reporting decisions and lead to auditor reporting conservatism.

Alternative model specification with additional controls for financial distress

Going concern reports are based on the auditor's assessment of the firm's ability to continue in operation, and this assessment will be largely related to financial distress and bankruptcy risk. To be sure that the results in Tables 4 and 5 are not due to omitted variables relating to financial distress/bankruptcy risk, the following analysis was undertaken. Begley, Ming, and Watts (1996) demonstrate the robustness of Ohlson's 1980 bankruptcy model using updated data from the 1980s, which is our test period. We add the Ohlson bankruptcy probability measure as an additional control variable to the models reported in Tables 4 and 5. As alternatives, we also used the updated Ohlson model in Begley et al. 1996,¹⁸ and Zmijewski's 1984 financial distress model. All three measures of financial/bankruptcy risk were positive and significantly associated with modified opinions. However, none of the accruals variables were affected in terms of parameter sign or a change in statistical significance, thus we conclude that our results in Tables 4 and 5 are not caused by omitted control variables for financial distress and bankruptcy risk.

5. Analysis of Big Six and non-Big Six auditors

The tests reported in Tables 4 and 5 implicitly assume auditors are homogeneous. However, there is a substantial literature suggesting the international Big Six accounting firms have reputations for higher quality audits.¹⁹ If Big Six auditors have more reputation capital to protect, it follows that Big Six auditors also have more incentives for reporting conservatism and avoiding litigation risk. To evaluate this, the two-level probit models in Table 4 are re-estimated to determine if both Big Six and non-Big Six auditors show evidence of reporting conservatism. In our sample, 85 percent of the observations are audited by Big Six auditors and 15 percent by non-Big Six auditors.

The analysis of Big Six and non-Big Six auditors requires that each accrual variable be further partitioned into those observations having Big Six and non-Big

Six auditors. In other words, an analysis is made of high-accrual and low-accrual firms audited by Big Six and non-Big Six auditors, respectively.²⁰ These tests are reported in Table 6. There is strong evidence of Big Six reporting conservatism, as four of the five accruals variables in Table 6 are positive and significant ($p < 0.01$).²¹ The only situation that does not indicate reporting conservatism is Model 2 for the test of high negative components of accruals versus low negative components. In contrast, non-Big Six auditors fail to show evidence of reporting conservatism as only one of five accruals variables is significant at $p < 0.05$ (gross accruals in Model 3).²²

In summary, Table 6 indicates that Big Six auditors are consistently conservative for high-accrual firms, while the non-Big Six generally show no such effect. Table 6 thus demonstrates that the results in Tables 4 and 5 are driven by the Big Six group of auditors. These findings are consistent with the argument that Big Six auditors modify more often because they have reputation capital at risk and, therefore, more incentives for conservative reporting.

6. Conclusions

Recent auditing standards and accounting research underscore the importance of accounting accruals in the financial reporting process. While accrual-based earnings are generally regarded as more informative than operating cash flows, there is also potentially greater uncertainty because of the subjective nature of the estimations required for accruals. This uncertainty has the potential to increase inherent audit risk and we argue that a rational auditor will respond by increasing the rate of audit report modifications for high-accrual firms, all other factors held constant. Our tests support this conjecture. After controlling for client-specific financial and market risk variables, we find that auditors of high-accrual firms are more likely to issue modified opinions for asset realization uncertainties and for going concern problems. The average effect is to approximately double the probability of a modified audit report.

We also analyzed Big Six and non-Big Six auditors and find that only Big Six auditors show evidence of reporting conservatism. This finding is important because it documents one reason why Big Six audits may be viewed as being of higher quality. Big Six reporting conservatism for high-accrual firms is consistent with recent findings that Big Six audited companies have smaller amounts of discretionary accruals (Becker, DeFond, Jambalvo, and Subramanyam 1998; Francis, Maydew, and Sparks forthcoming). The picture that emerges is that Big Six auditors are more conservative with respect to the financial reporting uncertainties posed by high-accrual firms. This conservatism manifests itself in two ways: first, in curbing discretionary accruals, thus making reported accruals more credible, and second, through a lower threshold for issuing a modified audit report, which means that Big Six auditors are more likely to signal asset realization and going concern problems for high-accrual firms through modified audit reports.²³

The study also demonstrates that auditors appear to be capable of developing a systematic decision model for reporting on material uncertainties and going concern problems, contrary to the claim that these are essentially prospective forecasts

TABLE 6

Probit estimates for accruals variables, by Big Six and non-Big Six auditors

	Expected Sign	Parameter Estimate	t-statistic
Model 1: Total net accruals			
<i>HPOSN-LPOSN (NBIG6)</i>	+	-0.218	-0.733
<i>HNEGN (NBIG6)</i>	+	0.167	0.753
<i>HPOSN-LPOSN (BIG6)</i>	+	0.403	2.725*
<i>HNEGN (BIG6)</i>	+	0.394	3.185*
Model 2: Positive/negative components			
<i>HPOSC (NBIG6)</i>	+	0.187	1.088
<i>HNEGC (NBIG6)</i>	+	-0.145	-0.765
<i>HPOSC (BIG6)</i>	+	0.255	2.896*
<i>HNEGC (BIG6)</i>	+	0.068	0.671
Model 3: Gross accruals			
<i>HGROSS (NBIG6)</i>	+	0.318	1.679 [†]
<i>HGROSS (BIG6)</i>	+	0.465	4.678*

Notes:

The dependent variable is coded zero for clean opinions and one for asset realization and going concern opinions. In addition to the variables reported, the model includes the variables shown in Table 3. The sample breakdown is 2,324 for clean opinions and 284 for asset realization and going concern opinions.

In the definitions below, high-accrual firms are firms with accruals (scaled by sales) above the median of the particular accrual measure specified, and low-accrual firms are firms with accruals (scaled by sales) below the median of the particular accrual measure specified. NBIG6 and BIG6 refer to clients of non-Big Six and Big Six auditors respectively. See Table 1 for definitions of accruals variables.

- HPOSN* = one if high positive net accruals, zero otherwise.
LPOSN = one if low positive net accruals, zero otherwise.
HNEGN = one if high negative net accruals, zero otherwise.
HPOSC = one if high positive accruals components, zero otherwise.
HNEGC = one if high negative accruals components, zero otherwise.
HGROSS = one if high gross accruals, zero otherwise.

* Significant at 1 percent level (one-tailed).

[†] Significant at 5 percent level (one-tailed).

and cannot be assessed by auditors (see *SAS 79* [AICPA 1995], paragraph 30; and *SAS 58* [AICPA 1988b], paragraph 18).²⁴ Regrettably, the private assessment and information an auditor can provide about the nature and seriousness of material uncertainties is no longer reported because of *SAS 79*. The decision in *SAS 79* to drop the required explanatory paragraph also means auditors no longer have this reporting tool available as a vehicle to manage the uncertainty posed by clients with high levels of accruals.

Endnotes

1. Since 1980, Canadian auditors have not been required to report on material uncertainties as long as footnote disclosures are sufficient (see Raghunandan 1993, 613). United States auditing standards have recently moved in this direction with the adoption of *SAS 79* (AICPA 1995) effective February 29, 1996. Similarly, auditors in Canada would only refer to going concern uncertainties if they were not adequately disclosed by the client (see Boritz 1991, 10). Under *SAS 59* (AICPA 1988c), U.S. auditors are still required to issue a going concern report.
2. Securities and Exchange Commission (SEC) sanctions against companies for financial reporting violations are often the result of misstatements in accruals-related accounts (Perez, Park, and Pastena 1991), and archival studies of audit working papers indicate that accruals misstatements are a common problem area (Kreutzfeldt and Wallace 1986; Houghton and Fogarty 1991; Entwistle and Lindsay 1994).
3. There are other ways a rational auditor might respond to the uncertainties posed by accruals in addition to reporting conservatism. First, more effort could be expended to verify accruals. However, given the inherent subjectivity of accruals, there are practical limits to what an auditor can do with respect to verification. This is consistent with Mock and Wright 1993, who find that there is little variation in audit programs as a function of inherent risk and control risk, and that audit programs tend to be fairly generic irrespective of these assessed risk levels. In related research, Thoman (1996) models auditor effort and demonstrates that auditor reporting conservatism is a more effective strategy for reducing legal exposure than expending more effort. A second strategy to manage audit risk would be for auditors to screen out high-accrual clients (Siliciano 1988). While client screening occurs for a segment of the market (Krishnan and Krishnan 1997), there is no evidence of its occurrence on a widespread scale (Francis and Grimplund 1998). Third, auditors could charge a premium for high-accrual clients to compensate for risk, though the empirical evidence to date suggests there is not a significant risk premium in audit fees (Simunic and Stein 1996). Finally, auditors may negotiate with companies, leading to the adjustment of accruals-related accounts through asset write-downs.
4. In related research, Francis and Reynolds (1998) and DeFond and Subramanyam (1998a) find that auditors also selectively screen out clients because of litigation risk, in addition to engaging in reporting conservatism.
5. Prior to January 1, 1989, material uncertainties resulted in subject to audit report qualifications as did the going concern report. *SAS 58* (AICPA 1988b) and *SAS 59* (AICPA 1988c) eliminated subject to opinions, replacing them with modified opinions, which are standard three-paragraph clean opinions plus a fourth paragraph explaining the existence and nature of the material uncertainty or the going concern situation. Studies by Carcello, Hermanson, and Huss 1995 and Mutchler, Hopwood, and McKeown 1997 find that the adoption of *SAS 59* has no significant effect on going concern reporting rates.
6. In the United States, the auditor still has the option of including a fourth paragraph in the audit report to emphasize a particular matter. However, this is not a requirement and companies may balk at auditors using this strategy to voluntarily report on material uncertainties since *SAS 79* (AICPA 1995) has explicitly dropped the formal requirement to do so.
7. Krishnan (1994) and Krishnan and Stephens (1995) are the only studies to analyze three ordered levels of audit reports: clean opinions, less serious report modifica-

- tions for material uncertainties, and more serious modifications for going concern. Their studies build on the two-level probit model in Dopuch, Holthausen, and Leftwich 1987. Other studies also examine binary reporting decisions; Bell and Tabor (1991) investigate clean versus modified opinions for material uncertainties, and Mutchler (1985) examines clean versus going concern modifications.
8. Krishnan (1994) examines the reporting conservatism of outgoing auditors in the last year before an auditor switch and finds that outgoing auditors were more conservative in their opinion (more likely to issue a nonclean report, all other factors held constant). Krishnan and Stephens (1995) extend this line of research by examining the reporting behavior in the first year of the new (replacement) auditor. They find the new auditor is just as conservative as the old auditor and conclude there is no short-term gain in terms of opinion shopping for a more compliant auditor.
 9. For the purpose of this study, clean opinions include technical "consistency" qualifications that were required for accounting policy changes. SAS 58 (AICPA 1988b) later dropped this requirement in favor of a clean opinion with an explanatory paragraph for audit reports issued after December 31, 1988.
 10. A small number of these observations (26) represent litigation-related uncertainties. As a sensitivity analysis, the models were also estimated after deleting these 26 observations and the results are not qualitatively different from those reported in Tables 4 to 6.
 11. Accruals are defined as net income minus operating cash flows. As in DeFond and Jiambalvo 1994 and other studies, operating cash flows are calculated as working capital from operations - (Δ in accounts receivable) - (Δ in inventories) - (Δ in other current assets) + (Δ in accounts payable) + (Δ in taxes payable) + (Δ in other current liabilities).
 12. Consider a company with only two accrual components; a small amount of positive accruals from an increase in accounts receivable, and a small but slightly larger amount of negative accruals from depreciation expense. Under Model 1, the two effects largely offset each other and the company would be classified as a net negative low-accrual firm. Under Model 2, each effect is separately identified, but due to the small dollar amounts, the company is classified as having both a low positive component and low negative component of accruals. Under Model 3, the two effects are added together and convey more accurately the total dollar amount of accruals in the computation of net income.
 13. Note that we use total accruals rather than an estimation of discretionary accruals. This approach is consistent with Lys and Watts 1994, who argue that auditors will generally be more concerned with total accruals in assessing audit risk.
 14. The estimated variance for $(\gamma_{HPN} - \gamma_{LPN})$ is given by $\text{Var}(\gamma_{HPN}) + \text{Var}(\gamma_{LPN}) - 2\text{Cov}(\gamma_{HPN}, \gamma_{LPN})$, where "Var" and "Cov" refer to the estimated variances and covariances of the parameters specified. The *t*-statistic for $(\gamma_{HPN} - \gamma_{LPN})$ is then the ratio of the estimate of $(\gamma_{HPN} - \gamma_{LPN})$ to the square root of its estimated variance.
 15. Financial companies having SIC codes 6000 to 6999 were excluded in Krishnan 1994 as were observations whose audit reports were scope-related disclaimers or adverse opinions.
 16. We pool data from 1986 and 1987 because the number of observations in each modified report category is small, particularly when categorized by high/low accruals. The 2,608 observations comprise 1,264 companies that have one observation each, and 672 companies that have two observations each. Likelihood ratio tests of differences in coefficients for the two years fail to reject the null hypotheses

of no differences in (i) the intercept and slope coefficients across the years (p -value = 0.854) and (ii) the slope coefficients alone across the years (p -value = 0.958). Thus, there is no evidence that pooling observations from 1986 and 1987 has any systematic effect on the results. However, as an additional analysis of time period, we re-estimated the models using only observations from 1987, as these comprised the majority of the sample (68 percent). These results are consistent with those reported in Tables 4 to 6.

17. The correlation matrix (not reported) indicates that multicollinearity is not a problem in our analysis, and variance inflation factors were under 2.5 for all variables in the model estimations.
18. The updated Ohlson's (1980) model in Begley et al. 1996 is specified as:

$$-1.249 - 0.211 \text{ SIZE} + 2.262 \text{ TLTA} - 3.451 \text{ WCTA} - 0.293 \text{ CLCA} \\ - 0.907 \text{ OENEG} + 1.080 \text{ NITA} - 0.838 \text{ FUTL} + 1.266 \text{ INTWO} - 0.960 \text{ CHIN}$$

where

SIZE = \ln (total assets/GNP price level).

TLTA = total liabilities/total assets.

WCTA = working capital/total assets.

CLCA = current liabilities/current assets.

OENEG = one if total liabilities exceed total assets, zero otherwise.

NITA = net income/total assets.

FUTL = funds provided by operations/total liabilities.

INTO = one if net income was negative for the last two years, zero otherwise.

CHIN = change in net income from prior year/sum of absolute value of current income and absolute value of prior year income.

19. The evidence shows the following: earnings announcements of Big Six audited companies are more credible (Teoh and Wong 1993), there is greater compliance with generally accepted accounting principles (Krishnan and Schauer forthcoming), and the Big Six reduce the initial public offering (IPO) underpricing problem (Beatty 1989). Higher quality is indirectly evidenced by the finding that Big Six auditors are used by companies with greater agency costs (Francis and Wilson 1988; DeFond 1992); and the fact that the Big Six have larger audit fees (Francis and Simon 1987; Ettredge and Greenberg 1990; and Craswell, Francis, and Taylor 1995) and lower rates of litigation (Palmrose 1988).
20. To examine auditor differences in treatment of clients, we expand the probit models in equations (2) through (4) to include a *BIG6* dummy variable (indicating whether the auditor is a Big Six auditor or not), and interactions between *BIG6* and the accrual variables. Thus, using Model 1, the probit equation is:

$$PQ_i = F(X\beta + \lambda_{HPN} HPOSN + \lambda_{LPN} LPOSN + \lambda_{HNN} HNEG + \lambda_B \text{BIG6} \\ + \lambda_{HPNB} HPOSN * \text{BIG6} + \lambda_{LPNB} LPOSN * \text{BIG6} + \lambda_{HNNB} HNEG * \text{BIG6}).$$

Then, $(\lambda_{HPN} - \lambda_{LPN})$ measures the differential treatment in the report decision of high and low positive net accrual firms by non-Big Six auditors and $(\lambda_{HPN} - \lambda_{LPN}) + (\lambda_{HPNB} - \lambda_{LPNB})$ measures the differential treatment in the report decision of high and low positive net accrual firms by Big Six auditors. Similarly, differences in the treatment of high and low negative net accrual firms by non-Big Six and Big Six auditors are given by λ_{HNN} and $(\lambda_{HNN} + \lambda_{HNNB})$, respectively. The estimated variance-

covariance matrix for the coefficients is used to calculate the standard errors for the differences defined above.

21. We do not report the re-estimation of the three-level ordered probit models. The models become quite complicated in terms of the number of threshold tests, but they are consistent with the results in Table 6 and show that Big Six auditors are conservative, while non-Big Six auditors generally are not.
22. As a sensitivity analysis, an alternative specification of accruals was used to test for non-Big Six reporting conservatism. Rather than using the full sample to partition observations into high and low levels of accruals, the respective clienteles of the Big Six and non-Big Six auditors are used to determine if each auditor group exhibited reporting conservatism within their own clientele. In other words, high and low levels of accruals were determined by the respective median values for each auditor clientele. The result of this analysis is consistent with Table 6, which finds no evidence of non-Big Six reporting conservatism for their high-accrual clientele, but does find evidence of Big Six reporting conservatism for their high-accrual clientele.
23. In a related study, DeFond and Subramanyam (1998b) find that companies receiving a modified audit report concurrently report income-decreasing discretionary accruals. Thus, while we find that total accruals appear to influence the auditor's decision to modify the audit report, DeFond and Subramanyam's results imply that auditors also require their clients to reduce reported income through lower discretionary accruals when a modified report is issued. In both instances, concerns over litigation risk could explain the conservative auditor behavior.
24. This claim was also advanced in Commission on Auditors' Responsibilities 1978 (27-30).

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