

Do Auditor-Provided Tax Services Improve the Estimate of Tax Reserves?*

CRISTI A. GLEASON, *University of Iowa*

LILLIAN F. MILLS, *University of Texas at Austin*

1. Introduction

We investigate whether auditor-provided tax services (ATS) improve the estimate of tax reserves. ATS could provide auditors with superior knowledge that would improve the quality of the audited financial reports, or they could impair auditor independence.¹ A threat to auditor independence arises from any situation that increases the probability the auditor will fail to report the results of his audit and will conceal bad news from shareholders (Simunic 1984: 680).² Academic research finds limited evidence that general nonaudit services impair auditor independence and, by implication, financial reporting.³ Specific to tax services, Cook, Huston, and Omer (2008) observe no differential management of tax expense to achieve analysts' forecasts when corporations use ATS, although higher amounts of ATS are associated with greater reductions in effective tax rates. Collectively, prior research finds little evidence that nonaudit services generally, or tax services specifically, are associated with impaired independence.

Indeed, auditor-provided nonaudit services might improve financial reporting. If ATS generate knowledge spillover, then information gained from providing tax services can improve the audit and, hence, financial reporting (Simunic 1984; Beck, Frecka, and

* Accepted by Kenneth Klassen. We appreciate suggestions from Brad Barber, Jennifer Blouin, Jennifer Brown, Andrew Cuccia, Wayne Guay, David Harris, Paul Hribar, W. Bruce Johnson, William Kinney, Morley Lemon, Thomas Lys, Edward Maydew, William Mayhew, Tom Omer, Jeff Schatzberg, Casey Schwab, Andrew Schmidt, Hollis Skaife, David Weber, Robert Yetman and workshop participants at the 2006 American Accounting Association Annual Meeting, the University of California-Davis, the 2006 Internal Revenue Service Research Conference, the University of Iowa, the University of North Carolina 2006 Tax Symposium, the University of Pennsylvania and the University of Texas. We also thank William Kress for excellent research assistance. Cristi Gleason thanks the Ernst & Young Excellence in Accounting Education fund for financial support.

The Internal Revenue Service (IRS) provided confidential tax information to one of the authors pursuant to provisions of the Internal Revenue Code that allow disclosure of information to a contractor to the extent necessary to perform a research contract for the IRS. None of the confidential tax information received from the IRS is disclosed in this treatise. Statistical aggregates were used so that a specific taxpayer cannot be identified from information supplied by the IRS.

1. When we refer to independence throughout this paper, we mean independence in fact. We acknowledge that ATS also create a problem of independence in appearance. Several studies including Dopuch, King, and Schwartz 2003 and Khurana and Raman 2006 find investors perceive the disclosure of nonaudit services negatively. Dopuch et al. call for more evidence about the degree of correspondence between independence in fact and in appearance.
2. Joe and Vandervelde (2007) find a loss of independence could stem from auditors' subconscious actions even with no intent to conceal information.
3. See, for example, Frankel, Johnson, and Nelson 2002; DeFond, Raghunandan, and Subramanyam 2002; Antle, Gordon, Narayanamoorthy, and Zhui 2006; Ashbaugh, LaFond, and Mayhew 2003; Chung and Kallapur 2003; Ferguson, Seow, and Young 2004; Larcker and Richardson 2004; Kinney, Palmrose, and Scholz 2004; Ruddock, Taylor, and Taylor 2006; Srinidhi and Gul 2007; Hope and Langli 2010. See Francis 2006 for a review of research on whether auditor-provided nonaudit services compromise independence.

Solomon 1988; Panel on Audit Effectiveness 2000).⁴ For the largest corporations, Kinney, Palmrose, and Scholz (2004) observe ATS are associated with fewer restatements. Although their paper does not speculate about why this result might occur, the result is consistent with theory concerning knowledge spillover.⁵ Based on this evidence, we predict that ATS improve the estimation of tax expense by increasing the adequacy of tax reserves.

In spite of Kinney et al.'s 2004 evidence that ATS seem to reduce restatements and a lack of evidence showing nonaudit services impair independence, corporations purchased fewer tax services from their auditors after the Sarbanes-Oxley Act (SOX). Maydew and Shackelford (2006) suggest specific prohibitions only partially explain the observed 74 percent decline in ATS since 2001.⁶ They conclude companies' self-imposed limitations and pressure from some institutional investors also contribute to the observed decline. However, tax accounts are rarely the primary account involved in a restatement (Badertscher, Phillips, Pincus, and Rego 2008). Further, ATS do not directly affect the accounts where most misstatements originate. Our setting provides an important contribution by examining a direct link between ATS and the financial reporting affected by such services, extending prior research on whether knowledge spillover occurs, as we predict, or if independence failure occurs, as is commonly surmised. In addition, tax reserves are present for a broad sample of corporations. Evidence in this common setting can complement prior evidence related to restatements, which are an extreme measure of poor financial reporting quality.

To investigate whether ATS improve the estimate of tax reserves, we test the adequacy of reserves for IRS disputes.⁷ We use a sample of 497 corporation-year observations between 2000 and 2002 for which the IRS completed an examination during the financial reporting year. These years predate audit firm restrictions imposed by the Public Company Accounting Oversight Board (PCAOB), and we have both auditor fee data and IRS examination data. We regress the change in tax reserves, estimated as current U.S. tax expense less option benefit less tax reported on the U.S. tax return, on the amount of IRS deficiencies and settlements. We acknowledge that we are unable to observe the pre- or post-audit balance of tax reserves, so we use the relation between our proxy for change in reserves compared to IRS claims as indirect evidence of the adequacy of reserves.

-
4. Knowledge spillover could also manifest in efficiency improvements resulting in higher profit for the audit firm or reduced fees for the client (Simunic 1984). If knowledge spillover only improves efficiency, our tests would fail to find any improvement in financial reporting. In addition, nonaudit services could motivate higher quality audits by increasing the costs of audit failure.
 5. In an earlier working paper and in a press release about the study, Kinney et al. (2004) state their evidence is consistent with knowledge spillover (<http://www.mcombs.utexas.edu/news/pressreleases/audit.asp>). Robinson (2008) finds that ATS are associated with going concern opinions in advance of bankruptcy and argues this evidence is consistent with knowledge spillover. In a striking counterexample of tax accounting being uninformative about financial earnings, Erickson, Hanlon, and Maydew (2006) provide evidence of a few firms that pay taxes on fraudulent earnings. The payment of taxes on fraudulent earnings would hinder auditors' ability to detect errors and misstatements in nontax accounts.
 6. Regulations now prohibit certain tax services and require audit committees to approve permissible ATS; see http://pcaobus.org/About/History/Documents/PDFs/Sarbanes_Oxley_Act_of_2002.pdf and http://pcaobus.org/Rules/Rulemaking/Docket017/2005-07-26_Release_2005-014.pdf. Francis (2006: 748) notes that, after the restrictions imposed by the Securities and Exchange Commission (SEC) and SOX took effect, taxation was the largest nonaudit service activity on most audit engagements, "and these services are generally viewed positively as a logical add-on to the audit and even helpful to the audit in verifying tax-related accounts in financial statements. However, this view has been recently tarnished by evidence of aggressive tax planning by several of the large accounting firms."
 7. We evaluate only ex post adequacy, because we cannot determine whether reserves are adequate with respect to information known only to the firm before the examination or settlement.

We find on average that corporations that purchase ATS are fully reserved for IRS disputes. In contrast, corporations that do *not* purchase ATS require additional tax reserves for IRS disputes or settlements. The fact that the ATS corporations are adequately reserved (where other corporations are not) is consistent with knowledge spillover. Our results are inconsistent with concerns about independence failure.

We conduct additional tests to rule out alternative interpretations of our evidence. First, we confirm auditors do not permit their tax clients to postpone recording losses from tax examinations into the future, strengthening our inference that the corporation was fully reserved. Second, we find no evidence that corporations that use ATS are more successful at smoothing earnings, a form of earnings management that would be inconsistent with our conclusion that ATS improve reporting of tax expense. Finally, we test the accuracy of tax reserves by using the absolute change in reserves as our dependent variable. We find corporations using ATS have more accurate, as well as more adequate, reserves. These additional tests strengthen our inference that ATS generate knowledge spillover.

Compared to corporations using *LargeCPA* auditors, we find no reduction in knowledge spillover when corporations purchase ATS from *NonLargeCPA* auditors.⁸ KPMG clients purchasing ATS appear over-reserved relative to other audit firms' clients and on average release reserves when they receive new information about IRS contingencies. These releases are consistent with KPMG's assertions in congressional hearings that it used a more conservative reporting standard than FASB Statement of Financial Accounting Standards No. 5 (*SFAS No. 5*), *Accounting for Contingencies* (PSICHSGA 2005). Overall, we find consistent evidence of knowledge spillover and no evidence of impaired independence.

Our study has important implications. For corporations purchasing ATS, the evidence is consistent with more adequate and accurate tax reserves, counter to concerns about independence failure and consistent with our prediction that ATS create knowledge spillover. This evidence suggests corporations could consider engaging auditors to provide tax services with less concern about auditor independence in fact, although we acknowledge boards could still be concerned about independence in appearance. Further, we believe the PCAOB's decision to permit most ATS with board of directors' approval improves financial reporting.

2. Institutional background and predictions

Corporations commonly pay less tax on their income tax return than the IRS will ultimately collect after it examines the return and all disputes are settled. Therefore, financial accounting standards require managers to estimate the expected tax loss and accrue a reserve. Estimating tax reserves requires judgment because of uncertainty about the ultimate settlement of disputes with the IRS. Such judgment permits opportunistic financial reporting, which auditors should limit unless ATS impair independence.⁹ Thus, tax loss reserves present a useful setting to explore whether financial reporting for tax expense improves through knowledge spillover from ATS or worsens due to auditors' impaired independence.

8. We use *LargeCPA* to represent Big 4 (Deloitte, Ernst & Young, KPMG, PricewaterhouseCoopers), Big 5 (with Arthur Andersen) or Big 6 (prior to the merger of Price Waterhouse and Coopers & Lybrand). Although our dependent variable is changes in tax reserves from 1999, 2000, and 2001 (when there were four or five large firms), we compute the outstanding contingency using data from the 1990s when there were six large national certified public accounting (CPA) firms.

9. Various authors find evidence consistent with corporations using tax expense to manage earnings generally (Dhaliwal, Gleason, and Mills 2004; Cook et al. 2008) or through permanently reinvested foreign earnings (Krull 2004), valuation allowances (Frank and Rego 2006; Schrand and Wong 2003), or tax reserves (Blouin and Tuna 2007).

Estimates of tax loss contingency

Corporations often begin recording reserves for tax contingencies when the tax return is filed. Effective during our sample period, *SFAS No. 5* requires a corporation to record the amount of liability that is probable and estimable.¹⁰ Anecdotal evidence suggests that companies take into account the following risks when they estimate the probable loss: the risk of the legal uncertainty, of IRS examination, of detection, and of litigation.¹¹ Companies update their reserves over time to reflect information from a variety of sources, including IRS examinations, the outcome of similar cases, counsel and appeals processes, settlements, or lapses in the statute of limitations.¹² The final adjustment of tax reserves comes at the eventual settlement of the return or a lapse in the statute of limitations. We focus on financial reporting years in which the IRS completes an examination, ensuring the corporation receives new information about the contingent tax liability during that year. We cannot use all years for our tests because, absent new information, originating and reversing accruals are likely to offset.

The reserve recorded in prior periods could be smaller than the expected value of all losses for several reasons. Some contingent losses that are not judged as probable under *SFAS No. 5* and thus not recorded will result in a realized loss. Also, if a corporation can only estimate a uniform range for a probable loss, FASB Interpretation No. 14 (*FIN No. 14*), *Reasonable Estimation of the Amount of a Loss—An Interpretation of FASB Statement No. 5*, requires the corporation to record the lowest number in the range. As a result, the application of *FIN No. 14* results in a smaller reserve when the possible range of loss is larger. Conversely, the reserve is larger when the range of loss is smaller, holding constant the expected value of the loss. This implies more accurate loss estimates lead to more adequate reserves.

Our main tests consider the implications of the change in reserve for the adequacy of reserves. The change in tax reserves that a corporation records after an IRS audit or settlement depends on the amount of reserve previously recorded. More adequate reserves require smaller increases of the reserve (or even permit decreases) based on information learned from the examination or settlement. Thus, we measure adequacy using the signed change in the reserve. Less adequate reserves for ATS corporations would indicate an independence failure. More adequate reserves for ATS corporations are evidence that ATS result in knowledge spillover. In supplemental tests, we also consider the effect of ATS on the absolute value of reserve changes as an additional test of knowledge spillover, because additional knowledge should improve accuracy as well as adequacy.

Role of auditors

Auditors assess the estimate of the tax reserve by reviewing tax returns, workpapers, and IRS correspondence to identify areas of tax risk; evaluating managers' own risk analysis;

10. Although many corporations used *SFAS No. 5* for guidance about tax uncertainty, the FASB observed in its explanation of FASB Interpretation No. 48 (*FIN No. 48*), *Accounting for Uncertainty in Income Taxes—An interpretation of FASB Statement No. 109*, that practice differed between firms because standards did not specifically address tax uncertainty.

11. Prior to *FIN No. 48* taking effect and requiring disclosures of tax reserves, it is unlikely the IRS would obtain useful information about tax reserves from financial statement disclosures. Gleason and Mills (2002) show tax footnotes contained few disclosures about tax reserves. Further, during our sample period the IRS exercised a policy of restraint and did not exert legal rights to obtain tax accrual workpapers granted in 1984 by the U.S. Supreme Court (*Arthur Young v. Comm.*). In 2002 the IRS changed that policy to examine audit workpapers related to listed tax shelter transactions (IRS Announcement 2002–63, 2002–27, Internal Revenue Bulletin 72). Finally, without accurate stock option information, estimating the reserve was difficult in the late 1990s.

12. The IRS examines the largest and most complex taxpayers nearly every year but examines smaller corporations less frequently (Hanlon, Mills, and Slemrod 2007). Even when it conducts an exam, the IRS may not detect and dispute all taxpayer positions it considers aggressive.

seeking outside legal opinions; and conducting tax research to assess the probability of loss. Theory and prior evidence offer contradictory explanations for whether nonaudit services increase or decrease the quality of the audit. Nonaudit services can improve audit quality through knowledge spillover (Simunic 1984; Beck et al. 1988). Tax advisors who provide compliance and planning services understand how well the client's fact patterns and legal structures match any legal precedents. Audit personnel can more easily learn about both the existence and the technical merits of any uncertain tax positions if their own tax department provides the advising. This argument assumes tax partners are more forthcoming with their own audit partners than with other auditors. In contrast, an audit firm that does not provide tax services must first detect aggressive tax positions, or rely on management to reveal those positions, and then generate evidence about the expected outcome of those positions.

We discussed our pre-SOX characterization of potential knowledge spillover with tax and audit partners across the Big 4 audit firms. Both audit and tax partners confirm that tax partners who provide tax planning to audit clients fully inform their audit partners of the tax contingencies associated with those plans. The tax partners generally believe they have unique knowledge about tax risk if they provide permissible services to audit clients.¹³ Tax partners say that if they do tax planning work for a nonattest client, they are more forthcoming with information to the other audit firm post-SOX than they were pre-SOX. These statements are consistent with auditors believing that knowledge spillover is more likely to occur from the tax partner to the audit partner of the same firm, at least prior to SOX.

Alternatively, nonaudit services may decrease audit quality if auditors permit corporations to record their tax reserves so as to increase or smooth net income. Independence failure results if the audit partner accedes to the client's wishes to record a biased estimate of the contingent liability. Per the SEC, independence failure is inherent in auditing the results of the firm's own accounting work, which would be the case if the audit firm prepared the tax provision or estimated the tax reserve related to the corporation's tax planning.¹⁴

Lack of independence could also arise if the tax services generate an economic bond. For example, the auditor might permit the client to record the financial effect of a tax transaction favorably in order to retain the tax engagement. The audit firm's dependence on the nonaudit service revenue increases the economic bond between the auditor and client. This bond could decrease the likelihood that the auditor corrects any bias (Beck et al. 1988; Kinney and Libby 2002).

The bond between the auditor and the client has a qualitative as well as an economic aspect if the nonaudit service is tax advice that directly affects earnings. Maydew and Shackelford (2006: 13) comment that, pre-SOX, "tax consultants would not promote a product that the auditors in their firm would not support". Some participants in the PCAOB roundtable voiced similar concerns:

If you get . . . that aggressive recommendation from the tax department of the audit firm, how likely is the auditor to call that advice into question? . . . When push comes to shove, will the auditor call that recommendation into question? And I think that becomes significantly less likely if the recommendation came from his own firm. (Barbara Roper (Consumer Federation of America), PCAOB 2004, 80)

13. Participants in the PCAOB Roundtable discussion offered some support for using ATS, such as the following: "We also believe that the provision of tax advice . . . [for] public registrants serves the public interest by permitting the auditor to conduct an efficient audit in respect to tax matters" (James Brasher (KPMG), PCAOB 2004: 28).

14. <http://www.sec.gov/rules/proposed/34-42994.htm>.

The issue of independence is particularly acute when the tax strategy is sold to achieve a particular financial statement result. The whole point of the auditor is to audit the financial statements, but now they're affecting the financial statement results and they're then going to audit that? How can that possibly be independent? (Mark Anson (Calpers), PCAOB 2004, 111)

Managers who face incentives to meet bonus targets, debt covenants, or analysts' earnings targets may wish to under-record reserves. In such cases, independence failure would likely lead to inadequate reserves. We consider this directional bias in our tests of adequacy.

Although some members of the roundtable expressed concerns about independence failure, Kinney et al. (2004) found that restatements were *less* common in the presence of ATS. Thus, we predict ATS will provide knowledge spillover, resulting in the following directional hypothesis:

HYPOTHESIS. *Corporations using ATS have more adequate reserves than corporations not using ATS.*

3. Research design

To test the adequacy of reserves, we estimate a regression model of the signed change in the tax reserve on a measure of tax contingency arising from new information for IRS deficiencies and settlements. The long time horizons in settling tax examinations mean there are many overlapping years of open tax returns with financial statements. Thus, we cannot directly measure the build-up of the reserve associated with any particular tax return. Instead, we infer the accrued reserve is adequate if the corporation records no additional reserve when the loss is finally realized. We interact the tax contingency with an indicator variable for ATS to test whether the association between the change in the tax reserve and the contingency is different in the presence of ATS on average. We estimate the following ordinary least-squares regression model:

$$\begin{aligned} \Delta Reserve_{it} = & a_0 + a_1 Tax\&Audit_{it} + a_2 Contingency_{it} + a_3 Contingency * Tax\&Audit_{it} \\ & + a_4 EM_{it} + a_5 EM * Tax\&Audit_{it} + a_6 U.S. Deferred Tax_{it} + a_7 CashETR_{it} \\ & + a_8 R\&D_{it} + a_9 ForeignPct_{it} + a_{10} LowForTax_{it} + a_{11} Size_{it} + a_{12} Year_{i2000} \\ & + a_{13} Year_{i2001} + e_{it} \end{aligned} \quad (1),$$

where:

$\Delta Reserve$ = U.S. current tax expense (or tax expense less deferred tax expense if missing) less unscaled *Option Tax Benefit* less unscaled *U.S. Tax Paid*, divided by pretax income. *Option Tax Benefit* is the tax benefit from stock options disclosed in the statement of cash flows or statement of stockholders equity. Where the amount is not disclosed, we compute the *Option Tax Benefit* to equal 35 percent times the number of shares exercised times the difference between the average stock price for the year and the average exercise price. If the latter computation is negative, we use the maximum stock price for the year in place of the average stock price. Finally, we set the benefit to zero where it is missing or negative. *U.S. Tax Paid* is tax after credits from the U.S. tax return.

$Tax\&Audit$ = 1 if the corporation purchases auditor-provided tax services; zero otherwise.

<i>Contingency</i>	=	The sum of deficiencies for IRS examinations completed during the year that are not yet settled plus the sum of amounts paid in settlement for returns closed during the same year. The IRS designates a return-year as closed when all remaining appeals or claims are settled. <i>Contingency</i> is scaled by pretax income.
<i>EM</i>	=	One if the corporation would have missed the last annual analysts' consensus forecast had it not decreased its tax expense in the fourth quarter relative to computing tax expense by using the third quarter estimate of the annual effective tax rate; zero otherwise.
<i>U.S. Deferred Tax</i>	=	U.S. deferred tax expense divided by pretax income.
<i>CashETR</i>	=	Taxes paid divided by pretax income net of special items.
<i>R&D</i>	=	Research and development expense (if nonmissing, otherwise zero) divided by sales.
<i>ForeignPct</i>	=	Absolute value of [foreign pretax income (if nonmissing, zero otherwise) divided by pretax income].
<i>LowForTax</i>	=	One if nonmissing foreign current tax / foreign pretax income < 35%; zero otherwise.
<i>Size</i>	=	Natural logarithm of sales.

Our dependent variable, $\Delta Reserve$, is the change in U.S. tax reserves (Gleason and Mills 2002), defined above.¹⁵ In our sample, the stock option tax benefit is recorded in stockholders' equity and reduces *U.S. Tax Paid* but not financial statement tax expense (Hanlon and Shevlin 2002).

To control for heteroskedasticity we scale all of the tax components by worldwide pretax income. Although deflation can introduce bias or spurious correlation, unscaled variables introduce serious size effects as well (Christie 1987; Barth and Kallapur 1995). Because the United States imposes tax on U.S. income plus repatriations from foreign subsidiaries, neither worldwide nor U.S. pretax income is a perfect benchmark, but worldwide income provides a better sense of materiality for interpreting our results. Our results are robust (untabulated) to scaling by U.S. pretax income or total assets.

Tax&Audit equals one if corporations report nonzero tax fees or if the description of "All Other Fees" mentions tax services.¹⁶ As our sample corporations frequently report

-
15. We replicate our tests using either worldwide effective tax rate (*WWETR*) or U.S. current effective tax rate (*USCurETR*) as the dependent variable, and controlling for nonreserve components of the ETR. Our results are robust for *WWETR* (*Contingency* coeff = 0.489, $t = 4.68$, *Contingency * Tax&Audit* coeff = -0.454, $t = -3.33$) as are our results for *USCurETR* (*Contingency* coeff = 0.426, $t = 1.81$, *Contingency * Tax&Audit* coeff = -0.597, $t = -2.22$). We winsorize the effective tax rates at one and zero (Gupta and Newberry 1997). Our results are also robust to dropping observations with one or zero ETRs.
16. Prior to 2003, the SEC did not explicitly require corporations to report tax fees paid to the external auditor. Initial 2003 disclosures also included a retroactive disclosure for 2002, but in 2000 and 2001 information about tax services was frequently included in the category "All Other Fees". The nature of 2000 and 2001 fee disclosures raises a concern about errors in our measurement regarding whether firms purchased ATS. Our results are robust to excluding the 108 observations that reported a dollar amount of "All Other Fees", did not describe the types of services included in "All Other Fees", and did not separately report tax fees. We also searched SEC Accounting and Auditing Enforcement releases from 2000 to 2009 and SEC comment letters from 2004 to 2008 (the period for which they are available on EDGAR). We find no enforcements related to a failure to disclose fees for auditor-provided services. We find only five firms identified as having failed to disclose tax fees during the period for which comment letters are available. Thus we conclude selective disclosure of the presence of ATS is not a pervasive problem in the population. Although we are unaware of any such cases, it is possible firms bias the amount of ATS they disclose. Using whether firms purchase ATS rather than the amount of purchased services minimizes this concern for our study.

purchased tax services without disclosing the dollar amount, we use an indicator variable in our tests to maximize use of the available disclosure.¹⁷

Contingency represents new information from the Internal Revenue Service. $\Delta Reserve$ will be positively related to *Contingency* if corporations decide that reserves are, on average, inadequate when they receive new information about contingent losses.

*Tax&Audit * Contingency* is our main variable of interest. The coefficient will differ from zero if changes in tax reserves for a given amount disputed by the IRS differ in the presence of ATS. A negative coefficient would be consistent with our prediction that knowledge spillover improves estimation. If corporations purchasing ATS record fewer additional reserves compared with other corporations, we will infer providing tax services is associated with more adequate estimation of tax reserves due to knowledge spillover. However, a positive coefficient for corporations purchasing ATS would indicate relatively inadequate reserves, consistent with independence being impaired.

We also consider earnings management incentives that influence the current-year adjustment to tax reserves. Dhaliwal et al. (2004) find decreasing tax expense to beat analysts' forecasts partially explains the discontinuity around beating analysts' annual earnings forecasts. Following Dhaliwal et al. and Gupta and Laux 2008, we expect corporations that would otherwise miss analysts' consensus forecasts without a decrease in tax expense ($EM = 1$) will decrease tax reserves more (or increase reserves less) than other corporations.

We control for the relation between purchasing ATS and managing earnings through tax reserve changes by interacting the incentive for earnings management with *Tax&Audit*. $EM * Tax\&Audit$ captures whether purchasing ATS attenuates or exacerbates the predicted negative association between earnings management incentives and adjustments to tax reserves.¹⁸ One tax partner we spoke with stated that in his experience, if an attest client wanted an especially beneficial financial accounting result from a tax plan, it was more likely to hire a law firm or a different audit firm to structure the transaction, making it more difficult for the auditor to challenge management's judgment about the tax risk. If this anecdote is representative and knowledge spillover permits auditors to constrain earnings management, $EM * Tax\&Audit$ will be positive. However, if ATS lead to independence failures, the interaction will be negative.

We control for variables that should generally explain recording different tax expense than taxes paid on the return in the current year, noting our dependent variable already adjusts for the effects of stock options. We include *U.S. Deferred Tax* expense to control for additions to tax reserves recorded in deferred tax rather than current tax. Holding payments on the U.S. tax return constant, if tax avoidance arises through temporary differences, corporations might initially record reserves in deferred tax expense rather than current tax expense, resulting in a negative relation between deferred tax and changes in reserves. *FIN No. 48* clarifies that unrecognized tax benefits cannot be recorded as deferred tax liabilities, but prior to *FIN No. 48* some corporations did so (Robinson and Schmidt 2009).

We also include controls for current period tax avoidance that could lead to increases in tax reserves for unrecognized tax benefits arising during the current year: *CashETR*,

17. We conduct robustness tests using a continuous independent variable measured as the natural logarithm of tax fees (Simunic 1984; Kinney et al. 2004). We exclude corporation-year observations that mention tax services without disclosing a dollar amount. This exclusion reduces our sample by approximately 25 percent of all sample firms and 42 percent of $Tax\&Audit = 1$ firms, consistent with our assertion that using the text description provides more power. However, our inferences are robust to using this continuous measure of the audit/tax relation.

18. In untabulated sensitivity tests, we also include the following interactions with EM : (1) $Contingency * EM$ and (2) $Tax\&Audit * Contingency * EM$. None of the interactions is significant.

R&D, *ForeignPct*, *LowForTax*, and *Size*. Although Dyreng, Hanlon, and Maydew (2008) note that a multi-year *CashETR* is a more stable measure of long-run avoidance, we measure the *CashETR* in the current year to control for contemporaneous changes in the tax reserves due to this year's tax planning.¹⁹ Following Blouin and Tuna 2007 and Gupta and Laux 2008, we expect corporations with lower cash ETRs are more likely to increase reserves in the current year, all else being equal.

Intellectual property and foreign operations should be associated with lower tax expense and lower taxes paid on the return because of credits and increased opportunities for tax-motivated income shifting to low-tax jurisdictions (Harris 1993; Klassen, Lang, and Wolfson 1993; Grubert and Slemrod 1998; Mills and Newberry 2004; Klassen and LaPlante 2009). Whether such tax avoidance is successful is uncertain, leading to a need for tax reserves. Hanlon et al. (2007) find that larger corporations, corporations with higher research and development (R&D), and multinational corporations have higher proposed deficiencies, so we generally expect such corporations to record higher tax reserves during our sample period. We use R&D expense scaled by sales (*R&D*) and the absolute value of the ratio of foreign pretax income to total pretax income (*ForeignPct*) to proxy for these income shifting opportunities (Gupta and Newberry 1997). We also include an indicator variable for having a foreign current ETR less than the U.S. statutory rate (*LowForTax*), adapting Blouin and Tuna 2007. We generally predict that *R&D*, *ForeignPct*, *LowForTax* and *Size* will be positively associated with changes in reserves. We include 2000 and 2001 year controls for time-specific economic or tax law changes. To deal with the sample dependence problem, we report Huber-White robust standard errors (Rogers 1993, generalizing White 1980). The maximum-likelihood estimation procedure assumes and estimates a common component of the variance and covariance matrix for all observations from the same corporation. The standard errors are robust to heteroskedasticity and serial correlation (StataCorp 1999: 257).

Sample selection and description

We use data from three primary sources: S&P Audit Fee data (2000–2003),²⁰ COMPUSTAT financial statement data (fiscal years 1994–2003), and Large and MidSize Business Tax Return Data (return-years 1994–2003). We use corporate financial statement and tax return data for those corporations with audit fee data. We supplement these data with available IRS examination data (return-years 1990–2000):

- Taxpayer identification information, including name, employer identification number, tax year, industry, etc.
- Data regarding the initial tax return filing, including the date filed, the tax liability on the return, amounts paid by estimate, paid with the return, other payments/transfers, and any penalties for nonfiling, late filing, or late payment.

19. Lower cash ETRs (cash taxes paid / pretax book income) reflect both tax avoidance and tax aggressiveness arising from differences between book and taxable income or from tax credits and foreign rate differences. In sensitivity tests, we substituted either a measure of discretionary permanent differences (Frank, Lynch, and Rego 2009) or a measure of book-tax differences (Wilson 2009). In either case, our inference is unchanged that $\Delta Reserve$ is positively related to *Contingency* and negatively related to *Contingency * Tax&Audit*. Our regression already includes deferred taxes and a measure of foreign activity to explain tax aggressiveness (Wilson 2009). We tabulate *CashETR* for simplicity and to maximize our sample.

20. Application of the 2003 SEC rule required a two-year tabulation of fees, and S&P auditor fee data is backfilled to capture the 2002 fees reported in the 2003 proxy statement. We appreciate Tom Omer sharing the 0/1 classification of his sample firms to permit us to confirm our 0/1 variables. Based on this comparison, we also conclude that our text searches of the description of other fees increase the number of firms classified as having auditors that performed tax services relative to using retroactively disclosed tax fees, increasing the power of our tests.

TABLE 1
Sample selection

	# Observations
Merge COMPUSTAT, U.S. tax return, IRS examination, and S&P audit fee data for publicly held corporations 2000–2002, requiring worldwide and U.S. pretax income > 0.	7,337
Restrict to observations with a completed IRS examination during the financial reporting year.	697
Restrict to observations with no auditor switches during previous five years or the current year.	509
Restrict to observations with tax paid on return plus stock option tax benefit less current tax expense < pretax income.	497

- Data regarding the IRS examinations, including the proposed examination deficiency.
- Data regarding payments in settlement, including amounts agreed at Examination, Appeals and Counsel, and the last date such a payment was posted.
- Other data including the status of the return (whether it is closed or open).

We limit the sample to observations with positive pretax worldwide and U.S. income to avoid difficulty interpreting effective tax rates based on negative denominators. Our initial sample includes 7,337 corporation-year observations for 2000, 2001, and 2002.

Table 1 describes the composition of the sample used in the regressions. In addition to data requirements, we restrict the sample to the 697 observations from 2000–2002 during which the IRS completed an examination during the financial reporting year.

We further restrict the sample to the 509 observations with no auditor switches in the previous five years or the current year. We impose the auditor restriction to make it more likely that an audit firm providing tax services in 1999, 2000, or 2001 also did so during the years following the tax return to which the deficiency relates.²¹ For example, suppose a corporation used Deloitte as its auditor from 1996 to 2000 and that a 1996 tax return examination is settled in 2000. If the corporation engages Deloitte to provide tax services in 2000, we assume Deloitte provided tax services between 1996 and 2000. Thus, when Deloitte audits the addition to tax reserves related to aggressive positions taken on the 1996 return in the years leading up to settlement, it has the benefit of knowledge gained in providing tax services. Finally, we exclude 12 corporations for which the stock option tax benefit is so large that tax paid on the return plus stock option tax benefit minus current tax expense exceeds 100 percent of pretax income. Because we cannot determine how much of the “negative reserve” is specifically due to excess stock option deductions, our measure of the tax reserve would be skewed for such corporations. Our final sample consists of 497 corporation-year observations.

Table 2 describes our sample variables. Except for the tax rate variables that are winsorized at zero and one, we winsorize all other continuous explanatory and control variables at 1 percent and 99 percent. Mean (2.2 percent of assets) and median (1.1 percent of assets) $\Delta Reserve$ are both positive, consistent with corporations on average recording additional reserves in the years in which the IRS completes an examination. Table 2 also shows the components of $\Delta Reserve$: $U.S. Current Tax - Option Tax Benefit - U.S. Tax$

21. Our data do not permit us to identify corporations that used ATS in prior years but discontinued using ATS prior to our sample period. However, any such errors will work against finding a difference between our two groups.

TABLE 2

Descriptive statistics for the sample of corporation-year observations 2000–2002 with audit fee, tax return, IRS examination and financial statement data

Variable ^a	N	Mean	Std Dev	Q1	Median	Q3
Tax expense variables						
<i>ΔReserve</i>	497	0.022	0.160	-0.022	0.011	0.057
<i>U.S. Current Tax</i>	497	0.247	0.185	0.123	0.244	0.326
<i>Option Tax Benefit</i>	497	0.041	0.088	0.002	0.011	0.038
<i>U.S. Tax Paid</i>	497	0.182	0.163	0.048	0.165	0.272
<i>Worldwide Tax Exp</i>	497	0.366	0.110	0.328	0.364	0.394
<i>CashETR</i>	497	0.263	0.200	0.137	0.256	0.336
<i>U.S. Deferred Tax</i>	497	0.031	0.207	-0.014	0.019	0.093
Auditor variables						
<i>Tax&Audit</i>	497	0.579	0.494	0.000	1.000	1.000
<i>NonAuditRatio</i>	497	1.536	1.933	0.321	1.020	1.917
<i>NonLargeCPA</i>	497	0.044	0.206	0	0	1
<i>Andersen</i>	497	0.195	0.497	0	0	0
<i>EY</i>	497	0.239	0.427	0	0	0
<i>DT</i>	497	0.139	0.346	0	0	0
<i>KPMG</i>	497	0.129	0.335	0	0	0
<i>PWC</i>	497	0.254	0.435	0	0	1
IRS Examination variables						
<i>Contingency</i>	497	0.033	0.089	0.000	0.004	0.024
<i>SettlementRatio</i>	497	0.487	1.605	0.222	0.500	0.800
Other variables						
<i>EM</i>	497	0.260	0.439	0	0	1
<i>R&D</i>	497	0.021	0.047	0.000	0.000	0.017
<i>ForeignPct</i>	497	0.140	0.242	0.000	0.000	0.204
<i>LowForTax</i>	497	0.251	0.434	0	0	1
<i>Size</i>	497	7.047	1.702	5.857	7.122	8.195

Notes:

^a See the Appendix for variable definitions.

Paid. Scaled by worldwide pretax income, average *U.S. Current Tax* is 24.7 percent, *Option Tax Benefit* is 4.1 percent, and *U.S. Tax Paid* is 18.2 percent. Average *Worldwide Tax Exp* is 36.6 percent of worldwide pretax income, and the one-year *CashETR* is 26.3 percent of pretax income net of special items, consistent with Dyreng et al. 2008. Approximately 58 percent of the observations use *ATS (Tax&Audit)*. Services other than audit or tax average one and a half times total audit and audit-related fees (*NonAuditRatio*). Only 4.4 percent of our sample does not use a *LargeCPA* auditor. PricewaterhouseCoopers and Ernst & Young perform more of the audits than the other audit firms in our sample.

Average *Contingency* of 3.3 percent of pretax income exceeds the third quartile, indicating that IRS-proposed deficiencies or corporations' settlement payments are skewed, with many corporations having small or zero deficiencies and settlements. The skewed distribution of *Contingency* indicates there are some large outliers. Our results are robust to dropping the five observations for which *Contingency* exceeds half of pretax income. *SettlementRatio* (the mean ratio of by-corporation aggregate settlements to aggregate deficiencies, limited to zero or 100 percent) averages 48.7 percent.

Twenty-six percent of our observations would have missed their annual analyst consensus forecast without decreasing their tax expense from the third-quarter rate (see Dhaliwal et al. 2004). Mean research and development expenses are 2.1 percent of sales, and foreign pretax income is on average 14 percent of worldwide pretax income in absolute value. About 25 percent of our corporations are subject to tax rates lower than the U.S. statutory rate on their foreign income (*LowForTax*). However, the median corporation has no foreign income or research and development expense. Our sample corporations are large, consistent with a high likelihood of IRS audit.²² Mean *Size* is approximately 7.0, which is equivalent to sales of \$1.2 billion. On average, our corporations are larger than restatement corporations, which had average sales of about \$800 million (Kinney et al. 2004: 570), but typical of corporations with tax reserves (Dhaliwal et al. 2004; Blouin and Tuna 2007).

Table 3 presents the results of univariate tests of our hypothesis. Panel A reports correlations among all our regression variables, and panel B shows *t*-tests of mean differences. $\Delta Reserve$ is positively correlated with *Contingency*, consistent with corporations generally increasing tax expense in the year the examination is completed or settled. $\Delta Reserve$ is negatively correlated with *Tax&Audit* alone, although we had no prediction for this main effect. Surprisingly, *CashETR* is positively correlated with $\Delta Reserve$, which suggests corporations that pay more tax record higher tax reserves. This could arise due to unreserved cash settlements with the IRS. *U.S. Deferred Tax* is strongly negatively correlated with $\Delta Reserve$, consistent with some corporations recording reserves in deferred taxes.

In panel B of Table 3, we consider how $\Delta Reserve$, *Contingency*, and other variables differ depending on whether or not the corporation hires its audit firm to perform tax services. Using ATS is associated with lower $\Delta Reserve$. However, using ATS does not result in a difference in *Contingency*, nor in variables that might represent tax avoidance, such as the *CashETR* or *U.S. Deferred Tax*. In addition, neither group is more likely to miss its earnings forecast if the corporation does not decrease its tax rate (*EM*). Thus, we observe no univariate evidence that auditor firms are more effective during our sample period than other providers of tax planning, such as nonauditor CPA firms, lawyers, and in-house experts.²³

We find no evidence using ATS reduces *Contingency* or the *SettlementRatio*. Finding no differences in examination outcomes between the groups suggests any differences in $\Delta Reserve$ in the regression results to follow are not due to underlying differences in examination outcomes.

In fact, very few of our variables differ across groups. Corporations that purchase ATS purchase fewer nonaudit (other than tax) services as a percentage of total fees (*Non-AuditRatio*), consistent with Omer, Bedard, and Falsetta 2006. If the purchase of nonaudit

22. Our results are robust to partitioning the sample into the 167 observations in the Coordinated Industry Cases (CIC) program, whose firms are audited nearly every year, or into the 330 observations not in the CIC. For the CIC firms, we estimate *Contingency* (coeff = 0.650, *t* = 4.00) and *Contingency * Tax&Audit* (coeff = -0.732, *t* = -3.60). For the non-CIC firms, we estimate *Contingency* (coeff = 1.265, *t* = 4.05) and *Tax&Audit * Contingency* (coeff = -1.774, *t* = -4.37). The larger coefficient for *Contingency* in the non-CIC firms is consistent with the less-audited firms needing to increase reserves for remaining open tax years once a firm is audited. Finally, we include *CountExams9099*, which is the number of tax return years between 1990 and 1999 that the IRS selected for audit. Our results are robust to including *CountExams9099* or to estimating our model only for firms that were audited just once during that period. Finally, untabulated *t*-tests indicate no significant difference in IRS examination frequency between the *Tax&Audit* = 1 observations and the *Tax&Audit* = 0 observations.

23. ATS are not the only source of tax planning. Slemrod and Blumenthal (1993) document that compliance costs include both internal tax department costs (salaries and information technology costs) and external consulting services, such as accounting and attorney fees. Finally, recall that our dependent variable includes taxes paid on the return, so it already effectively holds current tax planning constant.

TABLE 3
Univariate correlation and *t*-tests

Panel A: Pearson correlation statistics for regression variables

	<i>ΔReserve</i>	<i>Contingency</i>	<i>Tax&Audit</i>	<i>EM</i>	<i>CashETR</i>	<i>U.S. Deferred Tax</i>	<i>R&D</i>	<i>Foreign Pct</i>	<i>Low For Tax</i>	<i>Size</i>
<i>ΔReserve</i>	1									
<i>Contingency</i>	0.2498*	1								
<i>Tax&Audit</i>	-0.1246*	-0.0076	1							
<i>EM</i>	0.0006	0.0487	-0.0070	1						
<i>CashETR</i>	0.2171*	0.0876	-0.0210	-0.0109	1					
<i>U.S. Deferred Tax</i>	-0.3833*	-0.2964*	0.0487	-0.0490	-0.3239*	1				
<i>R&D</i>	-0.0849	-0.0195	0.0659	0.0601	-0.0927*	-0.0323	1			
<i>ForeignPct</i>	0.0515	0.0062	0.0131	0.0968*	-0.0640	-0.1094*	0.1279*	1		
<i>LowForTax</i>	0.04870	-0.0090	0.0147	0.1328*	-0.0881*	-0.0388	0.2300*	0.5001*	1	
<i>Size</i>	0.0785	0.0412	0.0577	0.0337	-0.0445	-0.0256	-0.0988*	0.2516*	0.1974*	1

Notes:

* indicates *p*-value < 0.05.

Panel B: Differences in means in the year the examination is completed

Variable ^a	Mean for <i>Tax&Audit = 1</i> <i>N = 288</i>	Mean for <i>Tax&Audit = 0</i> <i>N = 209</i>	<i>t</i> -statistic difference in means
<i>ΔReserve</i>	0.005	0.046	2.79***
<i>Contingency</i>	0.033	0.034	0.17
<i>SettlementRatio</i>	0.492	0.479	-0.39
<i>EM</i>	0.257	0.263	0.16
<i>CashETR</i>	0.259	0.268	0.47

(The table is continued on the next page.)

TABLE 3 (Continued)

Variable ^a	Mean for <i>Tax&Audit</i> = 1 N = 288	Mean for <i>Tax&Audit</i> = 0 N = 209	t-statistic difference in means
<i>U.S. Deferred Tax</i>	0.040	0.019	-1.08
<i>R&D</i>	0.024	0.018	-1.47
<i>ForeignPct</i>	0.142	0.136	-0.29
<i>LowForTax</i>	0.257	0.244	-0.33
<i>Size</i>	7.130	6.932	-1.29
<i>NonAuditRatio</i>	1.321	1.832	2.93***
<i>NonLargeCPA</i>	0.035	0.057	1.21
<i>Tenure</i>	9.913	9.813	-0.40

Notes:

***, **, * significant at 0.01, 0.05, 0.10, respectively.

^a See the Appendix for variable definitions.

services of all types has similar implications for auditor independence or knowledge spillover, then we are less likely to find a difference between $Tax\&Audit = 1$ and $Tax\&Audit = 0$ observations. *Tenure* (the number of years for which the corporation has used the same auditor) is no different among the $Tax\&Audit$ groups, due in part to our sample requirement that the corporation not switch auditors during the prior five years. Thus, we do not observe an ex ante explanation for maintaining a tax relationship with one's auditor.

4. Regression results

Table 4 reports results of estimating our regression model. As predicted, $\Delta Reserve$ is significantly ($p = 0.0000$) positively related to *Contingency*. The coefficient of 0.91 indicates corporations that do not use the same tax and audit firm increase reserves by 91 percent of the contingency they learn about during the year. This main effect shows corporations generally record additional tax reserves for their deficiencies and settlements when they do not use ATS. The magnitude of the coefficient seems to imply companies have previously recorded reserves for less than 10 percent of the eventual loss. However, the audit or settlement of some tax returns may also affect estimated losses for other unaudited years.

We now turn to our variable of interest to test our hypothesis. Consistent with our prediction, the significant negative interaction of $Contingency * Tax\&Audit$ (coeff = -1.14 for $\Delta Reserve$) indicates corporations using ATS record less tax contingency in tax reserves in the year the IRS completes its examinations. Although the magnitude of the negative coefficient makes it appear corporations release tax reserves, untabulated F -tests show the

TABLE 4

Ordinary least squares regression of change in tax reserves on tax contingencies, testing interaction with presence of auditor-provided tax services

Variables ^a	Sign	Coefficient	t -stat ^b
<i>Intercept</i>		-0.027	-0.72
<i>Tax&Audit</i>	?	-0.003	-0.18
<i>Contingency</i>	+	0.910***	7.32
<i>Contingency * Tax&Audit</i>	-	-1.139***	-5.06
<i>EM</i>	-	-0.026	-1.32
<i>EM * Tax&Audit</i>	?	0.024	0.91
<i>U.S. Deferred Tax</i>	-	-0.229***	-4.04
<i>CashETR</i>	+	0.049	0.97
<i>R&D</i>	+	-0.289*	-1.83
<i>ForeignPct</i>	+	0.020	0.56
<i>LowForTax</i>	+	0.015	1.03
<i>Size</i>	+	0.002	0.58
<i>yr2000</i>		0.018	0.78
<i>yr2001</i>		0.033	1.51
<i>R-Squared</i>		0.30	
<i>Observations</i>		497	

Notes:

***, **, * two-tailed p -value less than 0.01, 0.05, 0.10, respectively, for t -statistic.

^a See the Appendix for variable definitions.

^b Robust standard errors were computed using Huber-White corrections with clustering on employer identification number (StataCorp 1999).

net coefficient on *Contingency* for corporations using ATS ($Tax\&Audit * Contingency + Contingency$) is not significantly different from zero at the 10 percent level, two-tailed. On average, corporations using ATS do not change tax reserves when the IRS proposes a deficiency or corporations settle an outstanding dispute.²⁴ We conclude such corporations must have recorded adequate reserves previously. Our evidence is consistent with knowledge spillover but inconsistent with independence failure. We discuss evidence to rule out alternative explanations in supplemental tests.²⁵

When the corporation would otherwise miss its analyst forecast (*EM*) the corporation exhibits a weak propensity to decrease tax reserves ($t = -1.32$, one-tailed p -value = 0.094). Consistent with Dhaliwal et al. 2004, corporations use decreases in tax expense, in this case the tax reserve component, to beat forecasts. $EM * Tax\&Audit$ is insignificantly different from zero, so we conclude ATS do not affect earnings management.

We find both *U.S. Deferred Tax* and *R&D* are negatively associated with changes in tax reserves. When U.S. deferred tax expense is larger, corporations make smaller changes in tax reserves. As we discussed, this association could arise if corporations recorded some of their reserves in deferred tax expense. R&D-intensive corporations record less tax expense (net of the stock option benefit) relative to taxes paid. We had expected a positive association between R&D and tax reserves based on research-intensive corporations needing more reserves for uncertain tax issues like transfer-pricing. However, the negative relation indicates on average such companies decrease reserves in years when the IRS completes an examination. Our result is consistent with recent anecdotes. Even the \$3.4 billion transfer pricing settlement by pharmaceutical company Glaxo-SmithKline did not appear to affect earnings, suggesting that company had adequate reserves (Blouin, Gleason, Mills, and Sikes 2010).

Large CPA Auditors

Table 5 considers whether the identity of the auditor affects the inferences. Only 22 observations do not use a large national auditing firm (*NonLargeCPA*), so we use *LargeCPA* firms (Deloitte, E&Y and PWC) other than *KPMG* and Arthur Andersen (*Andersen*) as

-
24. We test whether the observed result that $\Delta Reserve$ is negatively related to $Contingency * Tax\&Audit$ is due to the auditor-client bond in general, rather than tax fees specifically. DeAngelo (1981) suggests the audit fee can result in an economic bond between the auditor and client that may impair auditor independence. Kinney and Libby (2002) posit the total of audit and nonaudit fees may be an appropriate measure of the economic bond and of the potential for impairment of auditor independence. In untabulated tests, we find our inferences are robust to including the natural logarithm of total fees or the natural logarithm of non-audit fees as a control for the economic bond. When we replace *Tax&Audit* with the natural logarithm of total fees or the natural logarithm of nonaudit fees other than tax we find a weakly positive association between $\Delta Reserve$ and $LogTotal\ Fees * Contingency$ or $LogNonAuditFees * Contingency$. We conclude other audit and nonaudit services do not improve the estimation of tax reserves. The link between the audit or nonaudit services and the amount of tax reserve recorded for IRS audits is less clear, however, and it may be an avenue for future research.
25. We considered whether endogeneity due to omitted variables that correlate with both the likelihood a firm purchased ATS and the change in reserves could influence our estimation. We test for endogeneity using a two-stage regression (Wooldridge 2002: 118–22, 621–23). In the first stage, we estimate two regressions with *Tax&Audit* and $Tax\&Audit * Contingency$ as the dependent variables. Our instruments are *String99*, *Leverage99*, which are proxies for incentives to manage earnings; *Dtax99* (following Frank et al. 2009, or alternatively *BTD99*, following Wilson 2009), which proxies for tax aggressive behavior; and *NonAudit-Ratio*, following Omer et al. 2006, to proxy for the propensity to purchase nonaudit services (see the Appendix for variable definitions). The F -tests in both first-stage models are significant at 0.000. In the second stage, we include the error terms from both first-stage regressions. The coefficients on the errors from the *Tax&Audit* and $Tax\&Audit * Contingency$ regressions are not significantly different from zero ($p = 0.580$ and $p = 0.423$). We are unable to reject the null hypothesis that *Tax&Audit* is not endogenous.

TABLE 5

Ordinary least squares regression of change in tax reserves on deficiencies, testing interaction with presence of auditor-provided tax services, controlling for Arthur Andersen and KPMG effects

Variables ^a	Sign	Coefficient	<i>t</i> -stat ^b
<i>Intercept</i>		-0.015	-0.36
<i>Tax&Audit</i>	?	-0.006	-0.35
<i>Contingency</i>	+ / -	0.879***	6.19
<i>Contingency * Tax&Audit</i>	-	-0.949***	-4.73
<i>EM</i>	-	-0.033*	-1.76
<i>EM * Tax&Audit</i>	?	0.026	1.02
<i>NonLargeCPA</i>	?	-0.023	-0.45
<i>NonLargeCPA * Tax&Audit</i>	?	0.058	0.87
<i>NonLargeCPA * Contingency</i>	?	4.456***	5.88
<i>NonLargeCPA * Contingency * Tax&Audit</i>	?	-4.642***	-5.50
<i>Andersen</i>	?	-0.004	-0.21
<i>Andersen * Tax&Audit</i>	?	0.001	0.01
<i>Andersen * Contingency</i>	?	-0.198	-1.29
<i>Andersen * Contingency * Tax&Audit</i>	?	0.622*	1.94
<i>KPMG</i>	?	-0.026	-1.26
<i>KPMG * Tax&Audit</i>	?	0.048*	1.71
<i>KPMG * Contingency</i>	?	1.573***	5.49
<i>KPMG * Contingency * Tax&Audit</i>	?	-2.159***	-4.86
<i>U.S. Deferred Tax</i>	-	-0.260***	-4.74
<i>CashETR</i>	+	0.007	0.13
<i>R&D</i>	+	-0.299*	-1.88
<i>ForeignPct</i>	+	0.012	0.33
<i>LowForTax</i>	+	0.018	1.23
<i>Size</i>	+	0.002	0.59
<i>yr2000</i>		0.023	0.97
<i>yr2001</i>		0.030	1.30
<i>R-squared</i>		0.35	
<i>Observations</i>		497	

Notes:

***, **, * two-tailed *p*-value less than 0.01, 0.05, 0.10, respectively, for *t*-statistic.

^a See the Appendix for variable definitions.

^b Robust standard errors were computed using Huber-White corrections with clustering on employer identification number (StataCorp 1999).

our reference group. We test the effect of *NonLargeCPA*, *KPMG* or *Andersen* on the general associations documented above, because *NonLargeCPA* auditors are perceived to conduct lower-quality audits (Francis, Maydew, and Sparks 1999) and *KPMG* and *Andersen* were being investigated by the Department of Justice.²⁶ *Andersen* collapsed following its indictment in the Enron case, having experienced several other high profile audit failures in that period. *KPMG* was specifically investigated for tax sheltering. However, in congressional testimony regarding its practices, *KPMG* partners argued it recommended

26. In untabulated tests, we find no difference in *SettlementRatio* within *Andersen* or *KPMG* clients that do versus do not use ATS.

conservative accounting for tax reserves for its clients (Permanent Subcommittee on Investigations of the Committee on Homeland Security and Governmental Affairs (PSICHSGA), 2005). We consider the intercept effect of these auditors as well as the interactions with *Contingency*, *Tax&Audit*, and *Contingency * Tax&Audit*.

The main results on *Contingency* and *Contingency * Tax&Audit* are unchanged for our *LargeCPA* firms (the benchmark case). That is, corporations generally record additional reserves when they learn the amount of the *Contingency* (coeff = 0.879) but do not record additional reserves if they use ATS (sum coeff = $-0.949 + 0.879 = -0.07$, $F = 0.27$, p -value = 0.6064).

Corporations using *NonLargeCPA* auditors generally need to record five times the contingency as an increase in reserves (*NonLargeCPA*Contingency* + *Contingency* coeff = $4.456 + 0.879 = 5.335$, $F = 50.67$, p -value = 0.00). In addition to any direct effect of the audit firm, use of a *NonLargeCPA* firm is negatively associated with client corporation size (t -test of difference in *Size* = 4.19). Because small companies are examined less often, they are less likely to record reserves prior to examination. As a result, when an infrequently audited corporation learns about its deficiency or settles an outstanding dispute, estimates of tax reserves for other open tax returns are also likely to increase. However, like *LargeCPA* firms generally, corporations using ATS from *NonLargeCPA* firms on average record zero additional reserves (sum coeff = $0.879 - 0.949 + 4.456 - 4.642 = -0.256$, $F = 0.56$, p -value = 0.4543).

Andersen clients require careful interpretation. The incremental coefficient on *Andersen*Contingency * Tax&Audit* (coeff = 0.622, $t = 1.94$) is weakly significant (p -value 0.053). However, the sum of the main *Contingency* coefficients (0.879–0.949) and the *Andersen*Contingency* effects (0.622–0.198) is not significantly different from zero (sum coeff = 0.354, $F = 1.94$, p -value = 0.165). In total, reserves do not appear less adequate for Andersen clients.

KPMG clients increase tax reserves for deficiencies if they do not use ATS, but record no additional reserves if they use ATS. In fact, the average net effect for KPMG clients using ATS is a release of tax reserves. That is, the sum of the main *Contingency* effects (0.879–0.949) and *KPMG*Contingency* effects (1.573–2.159) is negative (sum = -0.656 , F -test = 5.26, p -value = 0.022). KPMG clients that do not purchase ATS have, on average, less adequate reserves than clients of other firms. KPMG clients that purchase ATS have excess reserves on average, relative to clients of other firms.

5. Supplemental tests

We base our inference that ATS improve the reporting of tax reserves on indirect evidence. In this section, we consider and test alternative interpretations of our primary result. We also conduct supplemental tests of accuracy in reserve estimation.

Do corporations using ATS delay recording tax expense?

An alternative interpretation of the evidence in Table 4 is that auditors who provide tax services allow their clients to delay recording shortfalls in the tax reserve into the year following the deficiency or settlement year. If corporations record the additional reserves in a subsequent fiscal year, we should observe a positive relation between future reserves and current deficiencies or settlements. In untabulated tests, we find *Contingency* in year t is unrelated to changes in reserves in year $t + 1$, alone or interacted with *Tax&Audit*.²⁷

27. In implementing model 1, we measured *Contingency* and *EM* as of year t , but all other variables at time $t + 1$. Further, none of the *EM* variables explain changes in reserve in year $t + 1$. Details are available from the authors on request.

We conclude that our results that corporations using ATS need not record additional tax reserves are not explained by delaying the effect of tax contingencies to the next year.

Do corporations using ATS smooth earnings more often?

We must rule out corporations' use of tax reserves to smooth earnings to conclude that ATS improve the quality of accounting for tax reserves. Our main tests provide no evidence corporations using ATS decrease tax reserves to achieve analysts' targets more than do other companies. We now test whether corporations smooth earnings using tax expense more often if they use ATS. Blouin and Tuna (2007) find net earnings are smoother than pretax earnings net of cash taxes paid plus stock option benefit.

To measure smoothing, we adapt the smoothing measures used by Land and Lang 2002; Leuz, Nanda, and Wysocki 2003; Lang, Ready, and Wilson 2006; and Myers, Myers, and Skinner 2007. These studies measure smoothing as the degree of negative correlation between the change in discretionary accruals and the change in prediscretionary income. To focus on the effect of any tax expense management, we correlate tax management {pretax earnings per share * $(EtrQ_{t-1} - EtrQ_t)$ } with pre-managed earnings {pretax earnings per share * $(1 - EtrQ_{t-1})$ }. We use 420 quarterly observations ($n = 248$ for $Tax\&Audit = 1$) from quarters two through four of 1994–2005 with available COMPUSTAT data. In untabulated tests, we find significant negative correlations between tax management and pre-managed earnings, whether $Tax\&Audit = 1$ (mean $\rho = -0.70$) or $Tax\&Audit = 0$ (mean $\rho = -0.69$), consistent with changes in quarterly effective tax rates helping to smooth earnings. However, the difference between the groups is not statistically significant, suggesting ATS does not exacerbate earnings management.

Are losses more difficult to estimate for corporations not using ATS?

We consider whether the outcome of IRS examinations is more difficult to estimate for corporations that do not purchase ATS. We first compute the standard deviation of the annual IRS deficiency scaled by pretax income ($StdDevDeficiency$) for the period from 1994 to 2002. We expect ex ante estimation of IRS audit outcomes is harder for firms with more variable past audit outcomes. The untabulated mean $StdDevDeficiency$ across corporations is 3.0 percent. For corporations purchasing ATS, the mean is 3.1 percent, which is not significantly different from the mean for non-ATS corporations (2.8 percent). Our regression results are robust (untabulated $Contingency$ t -statistic = 4.41 and $Contingency * Tax\&Audit$ t -statistic = -4.53) to including $StdDevDeficiency$ and its interaction with $Contingency$, $Tax\&Audit$, and $Contingency * Tax\&Audit$. Neither the main effect of $StdDevDeficiency$ nor its interactions is statistically significant. Although ATS and non-ATS corporations do not differ with respect to the predictability of IRS deficiencies, we acknowledge we cannot perfectly control for corporations' private information about tax uncertainty.

Do ATS corporations significantly overestimate tax reserves?

Finally, we investigate whether accuracy, defined as the absolute change in reserves ($|\Delta Reserve_{it}|$), differs for corporations that purchase ATS. Although reserves may be more adequate, they could be less accurate if they are significantly overestimated. We regress $|\Delta Reserve_{it}|$ on our explanatory and control variables. We also include $StdDevDeficiency$, defined above, to control for differences in estimation difficulty. If corporations using ATS record more accurate tax reserves, then we would expect that $Contingency * Tax\&Audit$ will be negatively related to $|\Delta Reserve_{it}|$.

We find $Contingency$ is significantly, positively related to $|\Delta Reserve_{it}|$ (coeff = 0.950, p -value = 0.001) and $Contingency * Tax\&Audit$ is significantly negative (coeff = -0.745,

p -value = 0.001). These coefficients are similar in magnitude to those explaining $\Delta Reserve_{it}$ in Table 4. This similarity suggests that accuracy and adequacy are closely related in our setting, so we do not tabulate the $|\Delta Reserve_{it}|$ results.

6. Conclusion

The post-SOX reduction in ATS documented in prior research (Maydew and Shackelford 2006) may be due in part to perceptions that ATS impair auditor independence. However, there is no prior evidence that ATS impair independence. Alternatively, firms could be forgoing the benefits of knowledge spillover within an audit firm from the tax partner to the audit partner by eliminating ATS. We investigate which of these alternatives is more descriptive for the years 2000–2002, years in which financial statements largely predate SOX and the subsequent PCAOB restrictions.

Our results suggest that on average, only corporations that did not engage their auditors to provide tax services record additional tax reserves for tax contingencies when they learn the results of an IRS examination. In contrast, corporations using ATS do not record any additional tax reserves during the year of, or after, the deficiency is determined and the year in which any settlement is finalized. We conclude that corporations using ATS record adequate reserves for tax contingencies, consistent with knowledge spillover but inconsistent with impaired independence.

Consistent with prior research, we find that in general decreases in tax reserves are weakly related to incentives to beat analyst forecasts. However, we find no evidence that ATS affect how target-beating incentives relate to the change in reserves. Further, we find corporations that purchase ATS do not smooth earnings more than other corporations. Finally, we find that corporations that purchase ATS not only have more adequate reserves, but also have more accurate reserves. Our research design limits the sample to firms that were audited by the IRS or settled with the IRS during our sample period. We also require analysts' forecasts to compute a measure of earnings management incentives. As a result, our inferences may be more applicable to large firms that are subject to a higher risk of tax examination. Overall, our evidence is consistent with knowledge spillover resulting from ATS.

Internal control audits under SOX Section 404 revealed widespread material control weaknesses in the tax accounting systems.²⁸ These weaknesses increase pressure on corporations to document tax reserves. Additionally, FASB Interpretation No. 48 (*FIN No. 48*), *Accounting for Uncertainty in Income Taxes—An interpretation of FASB Statement No. 109*, effective for fiscal years beginning after December 15, 2006, provides complex measurement rules and requires corporations to disclose liabilities for unrecognized tax benefits. Because our evidence extends Kinney et al. 2004 by providing further evidence of the benefit of ATS, we believe boards should re-evaluate approving ATS, particularly in light of the demands for expertise arising from *FIN No. 48*. However, independence in fact may not be the sole influence on board decisions. Boards may still fail to approve ATS if they believe the market perception concerning independence in appearance is the more important consideration. Nonetheless, we recommend that the PCAOB maintain its current position of permitting ATS rather than further restricting tax services.

28. See Gleason, Pincus, and Rego 2009. See also Elder, Harris, and Zhou 2008, who find that firms using ATS have fewer tax-related internal control weaknesses.

Appendix

Variable definitions (# refers to COMPUSTAT item number)

Tax expense measures:

<i>ΔReserve</i>	=	[U.S. current tax expense (#63) (or tax expense less deferred tax expense if missing (#16 – #50)) less unscaled <i>Option Tax Benefit</i> less unscaled <i>U.S. Tax Paid</i>] divided by pretax income (#170).
<i>U.S. Current Tax</i>	=	U.S. current tax expense (#63) divided by pretax income (#170).
<i>Option Tax Benefit</i>	=	The tax benefit from stock options disclosed in the statement of cash flows or the statement of stockholders' equity. Where the amount is not disclosed, we compute <i>Option Tax Benefit</i> to equal 35 percent times the number of shares exercised times the difference between the average stock price for the year and the average exercise price. If the latter computation is negative, we use the maximum stock price for the year in place of the average stock price. Finally, we set the benefit to zero where it is missing or negative. <i>Option Tax Benefit</i> is scaled by pretax income (#170).
<i>U.S. Tax Paid</i>	=	Tax after credits from the U.S. tax return, divided by pretax income (#170).
<i>Worldwide Tax Exp</i>	=	Tax expense (#16) divided by pretax income (#170).
<i>CashETR</i>	=	Cash taxes paid (#317) divided by pretax income net of special items (#170 – #17).
<i>U.S. Deferred Tax</i>	=	U.S. deferred tax expense (#50) divided by pretax income (#170).

In all tax expense measures, we code the variable at one if the numerator is positive and the denominator is negative, or if the variable exceeds one. We code the variable at zero if the numerator is negative (except in the case of *U.S. Deferred Tax* which is bottom-coded at negative one). The top and bottom coding at one and zero follow Gupta and Newberry 1997 and Hanlon and Shevlin 2002.

Audit fee measures:

<i>Tax&Audit</i>	=	One if the corporation purchases auditor-provided tax services, zero otherwise. We determine the presence of tax services based on both disclosed amounts of tax fees as well as a text search of non-numeric disclosures.
<i>NonAuditRatio</i>	=	The ratio of total nonaudit services (excluding tax services) to total audit and audit-related fees.
<i>NonLargeCPA</i>	=	One if the audit firm is not a <i>LargeCPA</i> audit firm (Deloitte, Ernst & Young, KPMG, PricewaterhouseCoopers, Andersen), zero otherwise.
<i>Andersen</i>	=	One if the audit firm is Arthur Andersen, zero otherwise.
<i>EY</i>	=	One if the audit firm is Ernst & Young, zero otherwise.
<i>DT</i>	=	One if the audit firm is Deloitte, zero otherwise.
<i>KPMG</i>	=	One if the audit firm is KPMG, zero otherwise.
<i>PWC</i>	=	One if the audit firm is PricewaterhouseCoopers, zero otherwise.

Tax contingency measures:

Contingency = The sum of deficiencies for IRS examinations completed during the year that are not yet settled plus the sum of amounts paid in settlement for returns closed during the same year. The IRS designates a return-year as closed when all remaining appeals or claims are settled. *Contingency* is scaled by pretax income (#170).

SettlementRatio = Corporation mean *Settlement/Deficiency* percentage 1990–2003.
Deficiency = the sum of deficiencies for IRS examinations closed during the current financial reporting year, divided by pretax income.
Settlement = the sum of settlements for returns closed during the current financial reporting year, where closed returns are complete through examination, appeals, and counsel proceedings, as well as closed to any claims of amounts paid in settlement of IRS examinations, divided by pretax income (#170).

Control variables:

EM = One if the corporation would have missed the last annual analysts' consensus forecast had it not decreased its tax expense in the fourth quarter relative to computing tax expense by using the third quarter estimate of the annual effective tax rate; zero otherwise.

R&D = Research and development expense (if not missing, otherwise zero) (#46) divided by sales (#12).

ForeignPct = Absolute value of [foreign pretax income if not missing, zero otherwise (#273)] divided by pretax income (#170).

LowForTax = One if nonmissing foreign current tax expense (#64) / foreign pretax income (#273) < 35%; zero otherwise.

Size = Natural logarithm of sales (#12).

Additional control variables for endogeneity tests (see footnote 26):

String99 = The number of consecutive quarters the corporation beat its consensus analysts' forecast, counting backward from the third quarter of 1999.

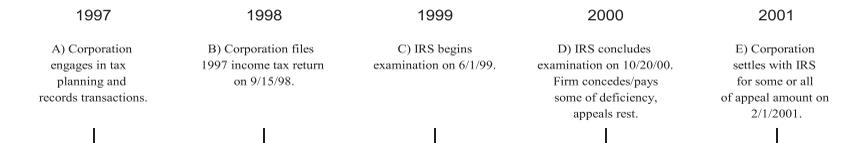
Leverage99 = Long-term debt (#9) divided by total assets (#6) at the end of 1999.

Dtax99 = The residuals from a model estimated by two-digit SIC codes regressing permanent BTDs on nondiscretionary items unrelated to tax planning that are known determinants of permanent BTDs following Frank et al. 2009.

BTD99 = BTD equals pretax book income (#170) less taxable income scaled by total assets. Taxable income is calculated by grossing up the sum of the current federal tax expense (#63) and the current foreign tax expense (#64) and subtracting the change in the NOL carryforward (#52) following Wilson 2009.

Except for the tax rate variables that are winsorized at zero and one, we winsorize all other continuous explanatory and control variables at 1 percent and 99 percent.

Timeline and illustration of variable definitions



The Timeline above illustrates the IRS examination process for a single tax return. We exclude prior and subsequent tax return years from our timeline, but those examinations would overlap with the tax period described.

We begin our illustration with the calendar year 1997 tax return. At year end, managers accrue current and deferred tax liabilities, taking into account any amounts of tax benefit the company will probably lose due to IRS challenge. Independent auditors review managers' recorded estimate of the tax accrual as part of the audit of the financial statements. Following the auditors' attestation, the corporation releases earnings and files SEC Form 10-K. Most corporations file their tax returns on the extended due date, September 15, 1998 in our example. We label the total tax after credits on the return as *U.S. Tax Paid*.

In our example, the IRS begins the examination in 1999 and completes its examination in 2000. In our sample, IRS examinations for 1994 returns conclude an average of 4.6 years after the year for which the return was filed, with a range from one to nine years to conclusion. We base this estimate on a broader sample of 1,406 returns from 1994 from our match of COMPUSTAT, tax return and IRS examination data for which the return is closed. The IRS records an *ExamDate* when the examination is complete, and the taxpayer responds to any additional tax (*Deficiency*) the IRS proposes to the taxpayer. This date is usually within 90 days of the Notice of Deficiency and represents the date the taxpayer agrees to or appeals the adjustment, or the date of statutory assessment if the taxpayer fails to respond to the Notice.

The corporation pays none, some, or all of the *Deficiency*. Whatever the corporation does not pay it disputes by filing an appeal. The IRS has divisions for examination, appeals, and counsel. Counsel handles court cases for the IRS and has final authority to concede and negotiate a settlement out of court. The IRS considers a return to be closed when no claims by the IRS or by the taxpayer remain outstanding. In our example, the corporation settles the dispute in 2001 and pays any final amount negotiated with the IRS or decided by the court. For purposes of measuring a settlement date for our tests, we use the latest date the IRS records a posting in Appeals or Counsel for any returns the IRS designates as closed. We label the sum of all amounts paid during the examination, appeals, or counsel processes as *Settlement*.

References

- Antle, R., E. Gordon, G. Narayanamoorthy, and L. Zhui. 2006. The joint determination of audit fees, non-audit fees and abnormal accruals. *The Review of Quantitative Finance and Accounting* 27 (3): 235–66.
- Ashbaugh, H., R. LaFond, and B. Mayhew. 2003. Do nonaudit services compromise auditor independence? *The Accounting Review* 78 (3): 611–39.
- Badertscher, B., J. Phillips, M. Pincus, and S. O. Rego. 2008. Earnings management strategies and the trade-off between tax benefits and detection risk: To conform or not to conform? *The Accounting Review* 83 (1): 69–98.
- Barth, M. E., and S. Kallapur. 1995. The effects of cross-sectional scale differences on regression results in empirical accounting research. *Contemporary Accounting Research* 13 (2): 527–67.

- Beck, P., T. Frecka, and I. Solomon. 1988. A model of the market for MAS and audit services: Knowledge spillovers and auditor-auditee bonding. *Journal of Accounting Literature* 7 (1): 50–64.
- Blouin, J., C. Gleason, L. Mills, and S. Sikes. 2010. Pre-empting disclosure? Firms' decisions prior to FIN No. 48. *The Accounting Review* 85 (3): 791–815.
- Blouin, J., and I. Tuna. 2007. Tax contingencies: Reserving the blow on earnings from tax audits and policy changes. Working paper, University of Pennsylvania.
- Christie, A. 1987. On cross-sectional analysis in accounting research. *Journal of Accounting and Economics* 9 (3): 231–58.
- Chung, H., and S. Kallapur. 2003. Client importance, nonaudit services, and abnormal accruals. *The Accounting Review* 78 (4): 931–55.
- Cook, K., G. R. Huston, and T. Omer. 2008. Earnings management through effective tax rates: The effects of tax planning investment and the Sarbanes-Oxley Act of 2002. *Contemporary Accounting Research* 25 (2): 447–71.
- DeAngelo, L. E. 1981. Auditor independence, “low balling”, and disclosure regulation. *Journal of Accounting and Economics* 3 (2): 113–28.
- DeFond, M., K. Raghunandan, and K. R. Subramanyam. 2002. Do nonaudit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research* 40 (4): 1247–43.
- Dhaliwal, D., C. Gleason, and L. Mills. 2004. Using income tax expense to achieve analysts' targets. *Contemporary Accounting Research* 21 (2): 431–59.
- Dopuch, N., R. King, and R. Schwartz. 2003. Independence in appearance and in fact: An experimental investigation. *Contemporary Accounting Research* 20 (1): 79–114.
- Dyreng, S., M. Hanlon, and E. Maydew. 2008. Long run corporate tax avoidance. *The Accounting Review* 83 (1): 61–82.
- Elder, R., D. Harris, and J. Zhou. 2008. Knowledge spillovers from auditor tax consulting and reported weaknesses in internal control. Working paper, Syracuse University.
- Erickson, M., M. Hanlon, and E. Maydew. 2006. Is there a link between executive equity holdings and accounting fraud? *Journal of Accounting Research* 44 (1): 113–43.
- Ferguson, M. J., G. S. Seow, and D. Young. 2004. Nonaudit services and earnings management: UK evidence. *Contemporary Accounting Research* 21 (4): 813–41.
- Francis, J. R. 2006. Are auditors compromised by nonaudit services? *Contemporary Accounting Research* 23 (3): 747–60.
- Francis, J. R., E. Maydew, and C. Sparks. 1999. The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Theory and Practice* 18 (2): 17–34.
- Frank, M. M., and S. Rego. 2006. Do managers use the valuation allowance account to manage earnings around certain earnings targets? *Journal of the American Taxation Association* 28 (1): 43–66.
- Frank, M. M., L. Lynch, and S. Rego. 2009. Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review* 84 (2): 467–96.
- Frankel, R., M. Johnson, and K. Nelson. 2002. The relation between auditors' fees of nonaudit services and earnings management. *The Accounting Review* 77 (Supplement): 71–105.
- Gleason, C., and L. Mills. 2002. Materiality and contingent tax liability reporting. *The Accounting Review* 77 (2): 317–42.
- Gleason, C., M. Pincus, and S. Rego. 2009. Material weaknesses in tax-related internal controls and earnings management. working paper, University of Iowa.
- Grubert, H., and J. Slemrod. 1998. The effect of taxes on investment and income shifting to Puerto Rico. *The Review of Economics and Statistics* 80 (3): 365–73.
- Gupta, S., and R. Laux. 2008. Do firms use tax cushion reversals to meet earnings targets? Working paper, Michigan State University and Arizona State University.

- Gupta, S., and K. Newberry. 1997. Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy* 16 (1): 1–34.
- Hanlon, M., L. Mills, and J. Slemrod. 2007. An empirical examination of corporate tax noncompliance. In *Taxing Corporate Income in the 21st Century*, ed. A. Auerbach, J. R. Hines Jr., and J. Slemrod, 171–210. Cambridge, UK: Cambridge University Press.
- Hanlon, M., and T. Shevlin. 2002. The accounting treatment of the tax benefits of employee stock options: Implications for financial accounting and tax research. *Accounting Horizons* 16 (1): 1–16.
- Harris, D. 1993. The impact of U.S. tax law revision on multinational corporations' capital location and income shifting decisions. *Journal of Accounting Research* 31 (Supplement): 111–40.
- Hope, O., and J. C. Langli. 2010. Auditor independence in a private firm and low litigation risk setting. *The Accounting Review* 85 (2): 573–605.
- Joe, J., and S. Vandervelde. 2007. Do auditor-provided nonaudit services improve audit effectiveness? *Contemporary Accounting Research* 24 (2): 467–87.
- Kinney, W., and R. Libby. 2002. Discussion of the relation between auditor's fees of nonaudit services and earnings management. *The Accounting Review* 77 (Supplement): 107–14.
- Kinney, W., Z. Palmrose, and S. Scholz. 2004. Auditor independence, non-audit services, and restatements: Was the U.S. government right? *Journal of Accounting Research* 42 (3): 561–88.
- Klassen, K., M. Lang, and M. Wolfson. 1993. Geographic income shifting by multinational corporations in response to tax rate changes. *Journal of Accounting Research* 31 (Supplement): 141–73.
- Klassen, K., and S. LaPlante. 2009. Cross-jurisdictional income shifting: A multi-year approach. Working paper, University of Waterloo.
- Krull, L. 2004. Taxes and the reinvestment of foreign subsidiary earnings. *The Accounting Review* 79 (3): 745–67.
- Khurana, I., and K. K. Raman. 2006. Do investors care about the auditor's economic dependence on the client? *Contemporary Accounting Research* 23 (4): 977–1016.
- Land, J., and M. Lang. 2002. Empirical evidence on the evolution of international earnings. *The Accounting Review* 77 (Supplement): 115–34.
- Lang, M., J. Ready, and W. Wilson. 2006. Earnings management and cross listing: Are reconciled earnings comparable to US earnings? *Journal of Accounting & Economics* 42 (1/2): 255–83.
- Larcker, D., and S. Richardson. 2004. Fees paid to audit firms, accrual choices and corporate governance. *Journal of Accounting Research* 42 (3): 625–58.
- Leuz, C., D. Nanda, and P. Wysocki. 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics* 69 (3): 505–27.
- Maydew, E., and D. Shackelford. 2006. The changing role of auditors in corporate tax planning. NBER Working Paper 11504, August 2005.
- Mills, L., and K. Newberry. 2004. Do foreign multinationals' tax incentives influence their U.S. income reporting and debt policy? *National Tax Journal* 57 (1): 89–107.
- Myers, J., L. Myers, and D. Skinner. 2007. Earnings momentum and earnings management. *Journal of Accounting, Auditing, and Finance* 22 (2): 249–84.
- Omer, T., J. Bedard, and D. Falsetta. 2006. Auditor-provided tax services: The effects of a changing regulatory environment. *The Accounting Review* 81 (5): 1095–1117.
- Panel on Audit Effectiveness. 2000. *The Panel on Audit Effectiveness report and recommendations*. Stamford, CT: Public Oversight Board.
- Permanent Subcommittee on Investigations of the Committee on Homeland Security and Governmental Affairs (PSICHSGA). 2005. *The role of professional firms in the U.S. tax shelter industry*. United States Senate. S. Rep. 109–54.
- Robinson, D. 2008. Auditor independence and auditor-provided tax service: Evidence from going-concern opinions prior to bankruptcy filings. *Auditing: A Journal of Practice and Theory* 27 (2): 31–54.

- Robinson, L., and A. Schmidt. 2009. An examination of mandatory disclosure quality: Evidence from FIN 48. Working paper, Dartmouth University.
- Rogers, W. 1993. Regression standard errors in clustered samples. In *Stata Technical Bulletin Reprints, vol. 13*. College Station, TX: Stata Press.
- Ruddock, C., S. J. Taylor, and S. L. Taylor. 2006. Nonaudit services and earnings conservatism: Is auditor independence impaired? *Contemporary Accounting Research* 23 (3): 701–46.
- Schrand, C., and M. H. F. Wong. 2003. Earnings management using the valuation allowance for deferred tax assets under SFAS 109. *Contemporary Accounting Research* 20 (3): 579–611.
- Simunic, D. 1984. Auditing, consulting, and auditor independence. *Journal of Accounting Research* 22 (2): 679–702.
- Slemrod, J. B., and M. Blumenthal. 1993. *The compliance costs of big business*. Washington, DC: The Tax Foundation.
- Srinidhi, B. N., and F. A. Gul. 2007. The differential effects of auditors' nonaudit and audit fees on accrual quality. *Contemporary Accounting Research* 24 (2): 595–629.
- StataCorp. 1999. *Stata Statistical Software: Release 6.0. User's Guide*. College Station, TX: Stata Press. [U] 23.11: 256–60.
- White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48 (4): 817–38.
- Wilson, R. 2009. An examination of corporate tax shelter participants. *The Accounting Review* 84 (3): 969–99.
- Wooldridge, J. 2002. *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.