

# **The influence of auditor provided tax planning and tax compliance services on effective tax rates and tax risk**

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## **ABSTRACT**

This study examines associations between auditor-provided tax compliance and tax planning services and three primary tax objectives that the Tax Council Policy Institute (2006) and Ernst & Young (2006) highlight as significantly important in the current tax environment. These objectives include effective tax rate reductions, cash tax savings, and tax risk management. Collectively, our results suggest that companies paying their auditors for tax planning advice are more effective tax planners (in terms of reductions in effective tax rates and higher cash tax savings without increases in tax risk) than firms who do not engage their auditor for tax work. However, our tax rate minimization and cash tax savings results hold only when firms also engage their auditors for tax compliance work, which is consistent with auditors seeking to minimize reputation threats. Our study's unique hand-collected panel dataset provides a more precise and longitudinal perspective on the role auditors play in designing and overseeing tax outcomes that helps to bridge the disconnect between academic research and policy debates regarding auditor provided tax services (APTS).

**Keywords:** tax non-audit services; effective tax rates; tax risk

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## 1. INTRODUCTION

The increased reliance by audit firms on tax services revenue from their audit clients has led to regulatory concerns on how the provision of lucrative tax services such as tax planning services promotes tax positions that are not allowed by regulators (PCAOB 2005; ISS 2014). Lawmakers have also investigated whether audit clients reap large tax savings through high risk tax strategies (US Senate, 2014) devised by accounting firms who provide both audit and high levels of tax services to their clients (e.g., PriceWaterhouseCoopers to Caterpillar). Accounting firms contend that the provision of tax and other consulting services facilitates effective application of governance and internal controls to manage the tax risk of clients.<sup>1</sup> Our study helps to shed light on this debate and advance our understanding of the role of the auditor in tax outcomes by examining how two distinct auditor provided tax services, tax planning and tax compliance, relate to corporate GAAP and cash effective tax rate levels and volatilities.

Our decision to focus on the tax outcomes reflecting both GAAP and cash effective tax rate levels and volatilities is based on a number of considerations. First, information on firms' effective tax rates are both readily observable or easily computed using financial reports. Effective tax rates are also a well understood summary measure of corporate tax outcomes that managers, auditors, and boards can monitor (Chyz and Gaertner, 2018; Dyreng, Hanlon, and Maydew, 2010; Armstrong, Blouin, Jagolinzer, and Larcker, 2015). Second, a 2006 survey by Tax Council Policy Institute indicates that 50% (39%) of senior tax executives at Fortune 500 companies responded that reduced effective tax rate reduction (cash tax savings) was their most important tax management objective. Third, firms typically endeavor to minimize tax-related surprises and avoid unexpected changes in effective tax rates (McGuire, Neuman, and Omer, 2013) which we expect

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<sup>1</sup> <https://www.pwc.com/gx/en/services/tax/tax-controversy-dispute-resolution.html>

would manifest in lower tax rate volatility. Fourth, the volatility in effective tax rates has been used in the prior literature as a proxy for “tax risk” (Guenther, Matsunaga, and Williams, 2017; Hutchens and Rego, 2015) and the Ernst & Young 2006 Global Tax Risk Survey suggests that tax risk management was the tax department’s most important objective and a leading measure of performance. Accordingly, we refer to the volatility in GAAP and cash effective tax rates as “tax risk” throughout our paper.<sup>2</sup>

Distinguishing between planning and compliance is important because these services have unique purposes and are performed by different professionals (AICPA 2011). Amounts paid to auditors for these services are also economically meaningful. Within the group of firms in our sample that purchase tax non-audit services (tax NAS), companies pay their auditors an average of \$258,503 for tax planning and \$393,156 for tax compliance. Within the top tercile of firms that procure tax planning and tax compliance fees these amounts are \$964,487 and \$969,252 respectively.

The reliance of prior studies on machine readable data sources that provide data on fees audit clients pay for *total* tax services (e.g. McGuire et al., 2012, Cook, Kim and Omer, 2013; Hogan and Noga, 2015) has prevented these studies from isolating the effects of tax planning and tax compliance services on effective tax rates. While the volatility in tax rates has become increasingly important to academics and practitioners its determinants, including the role of the auditor, are not yet well understood or well documented (Ernst & Young, 2006; Tax Council Policy Institute, 2006; KPMG, 2013; Guenther, Matsunaga, and Williams, 2017). Our study helps to overcome some of these limitations and gaps in the literature by using a unique hand-collected

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<sup>2</sup> Other studies use uncertain tax benefits (UTBs) to capture the construct of “tax uncertainty” (Dyreng, Hanlon, and Maydew 2018; Guenther et al. 2017; Robinson, Stomberg, and Towery, 2016; Hutchens and Rego 2015; Rego and Wilson 2012). We view this as distinct from tax risk as captured by effective tax rate volatilities.

panel dataset beginning in 2007 that distills tax planning and tax compliance services from total auditor provided tax services (APTS). As a result, our research responds to the call by Klassen, Lisowsky, and Mescall (2016) to sharpen empirical analysis so that more reliable inferences can be drawn from the link between tax service providers and corporate tax outcomes.

Because of their unique position and relationship with companies, the involvement of a company's auditor in the corporate tax function can be an important determinant of tax outcomes (Klassen et al. 2016). Klassen et al. (2016) postulate that threats to auditor reputation are greater when they provide substantial tax compliance related services. This suggests that audit firms providing higher levels of *tax compliance* services could be less inclined to support lower effective tax rates (Klassen et al. 2016). While reputational threats are also likely relevant for auditors providing higher levels of *tax planning*, auditors must manage the desire of companies that are engaging their auditors to help lower effective tax rates. As a result, we expect to observe lower effective tax rates when tax planning services are higher but not when tax compliance services are higher. While low effective tax rate levels could translate into greater tax rate volatility, it is also possible that auditors providing tax planning services endeavor to minimize tax rate volatility to a greater extent than non-auditor tax service providers because of reputational threats stemming from auditors' heightened sensitivity to having tax positions overturned (Klassen et al., 2016). The manner in which auditor provided services influence the tradeoffs between lower effective tax rates and tax rate volatility is an important empirical question that we address in our paper.

Our primary empirical results are generally consistent with our expectations while also revealing a number of additional insights. After holding constant the variation in tax compliance, higher levels of tax planning services are associated with greater cash tax savings and effective tax rate reductions. We also find that tax planning services are negatively associated with the volatility

in both GAAP and cash effective tax rates. We find no evidence that tax compliance services are associated with effective tax rate levels or tax risk. Overall, our primary results suggest that companies procuring *tax planning* advice (but not *tax compliance*) from their auditors are more effective tax planners (in terms of tax risk management and effective tax rates) than companies who do not engage their auditor for tax work.

In additional analysis we further explore our setting in two ways. First, we look for evidence that tax planning services help clients simultaneously reduce effective tax rates and tax risk. These tests provide some evidence that the highest levels of tax planning fees are found in clients with simultaneously lower effective tax rates and tax volatilities. Second, we explore whether the joint provision of tax compliance and tax planning services impacts our primary multivariate regression results. This analysis is motivated by our conversations with Big 4 tax partners who indicate that audit firms have been less willing to provide advice on tax transactions having material financial reporting implications that generate GAAP and cash tax savings unless they are also involved in the company's tax compliance work. We find that the effect of tax planning on effective tax rates is indeed concentrated in the set of companies that also purchase tax compliance services from their auditor.<sup>3</sup>

Our empirical results reveal previously unexamined associations between tax fee components that are not apparent from examining total tax fees. As a result, we extend prior research that examines total APTS (e.g. Cook, Huston, and Omer, 2008; McGuire et al., 2012, Cook et al., 2013) by documenting that tax planning and tax compliance components of total tax fees have differential effects on tax outcomes. Our related additional analysis also leads to a

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<sup>3</sup> While we have no clear expectations, for completeness we also test for any impacts the joint provision of tax planning and tax compliance has on tax risk management. The results of these tests are similar and suggest that tax planning with tax compliance is more strongly associated with lower tax volatilities.

number of contributions. First, to the extent that lower tax volatility signals consistent and effective tax planning that benefits shareholders, our results suggest that the criticisms of, and restrictions on, tax planning NAS by regulators, proxy advisors, and legislators (PCAOB 2005; SEC 2006; EU 2010) could be misplaced in some circumstances.<sup>4</sup> Second, we highlight the importance of the auditor provided tax service mix, which cannot be discerned from an examination of aggregate tax NAS fees, for tax outcomes. Practitioners and academics contend that efficiencies and knowledge spillover benefits arise when audit services and APTS are jointly provided (e.g., PCAOB 2004a; Christensen, Olson, and Omer, 2015; Kinney et al. 2004; Krishnan, Visvanathan, and Yu 2013; Paterson and Valencia 2011; Seetharaman, Sun, and Wang 2011). Our findings suggest some previously undocumented positive spillover benefits between distinct tax services. The findings in Klassen et al. (2016) implies that tax compliance NAS services are associated with a decreased likelihood of the auditor devising aggressive tax strategies. While this could be true with respect to tax compliance on average and in isolation, our joint provision results suggest that tax compliance NAS constitute one important component in amplifying the implementation of effective (but less volatile) tax strategies from tax planning services.

Our study's results also shed some light on a somewhat unexpected set of findings in the recent literature. Contrary to expectations, Guenther et al. (2017) find little evidence of a positive association between tax avoidance and tax risk across a number of empirical proxies for tax avoidance. Instead, the only statistically significant set of results in Guenther et al. (2017) supports a negative relation between empirical proxies for tax avoidance and tax risk. Relatedly, Dyreng, Hanlon, and Maydew (2008) document evidence that many firms are able to maintain consistently

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<sup>4</sup> This statement is subject to the caveat that we do not consider the implications of lucrative tax planning services on financial reporting and audit quality, which regulators have also expressed concerns about (Beale 2004; PCAOB 2004b; SEC 2006).

low effective tax rates. The findings in these papers could be attributable to relatively “benign” tax planning such as tax exempt municipal bond investments or accelerated depreciation deductions (Lisowsky, Robinson, and Schmidt, 2013; Guenther et al., 2017). Because it is unlikely that firms pay for APTS that provides benign tax planning, our results suggest that the findings in Guenther et al. (2017) and Dyreng et al. (2008) could be partly attributable to the auditor’s participation and expertise in implementing tax avoidance strategies that are persistent and do not increase tax risk.

The remainder of the paper is organized as follows. Section 2 provides the background to the study and develops our hypotheses, and Section 3 explains our sample selection. Section 4 discusses the research design and Section 5 presents the empirical results. Section 6 discusses the additional analyses and robustness tests. Finally, Section 7 summarizes and concludes the study.

## **2. BACKGROUND AND HYPOTHESES**

### ***Auditor-Provided Tax Services and Effective Tax Rates***

Based on the extant research, it is difficult to know whether tax planning and compliance services have differential effects on effective tax rate reductions and cash tax savings. Practitioners contend that efficiencies and knowledge spillover benefits arise when audit services and APTS are jointly provided, and they particularly highlight that the objectives and benefits of tax services lie in the type of tax services provided such as tax planning and compliance (PCAOB 2004a). Detractors argue that APTS impair auditor independence and deteriorates financial reporting quality, while others are concerned about the potential for risky and abusive tax strategies (e.g., Bryan-Low 2003; Beale 2004; PCAOB 2004a, 2004b; US Treasury 2008). The accounting profession argues that routine tax compliance services provided by the audit firm do not promote tax avoidance (PCAOB 2004b).<sup>5</sup> On the other hand, tax planning services are aimed at maximizing

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<sup>5</sup> According to the American Institute of Certified Public Accountants (AICPA 2011) and PCAOB (2004a), tax compliance services include the preparation of original and amended tax returns, estimation and transmittal of any

after-tax wealth. Examples of legitimate tax planning activities include taking advantage of loss carryforwards, setting up operations in low-tax foreign countries, utilizing foreign and R&D tax credits, engaging in tax-efficient spin-offs, and minimizing merger and acquisition tax consequences.<sup>6</sup> Examples of somewhat aggressive or even abusive tax planning that potentially serves little or no business purpose can include offshore tax sheltering and corporate inversion transactions (Lisowsky et al., 2013).

Although there are several types of tax providers (e.g., in-house, third-party, auditor-provided), audit firm tax providers may be able to develop more effective tax strategies because they accumulate significant knowledge about their client's business, internal processes, systems, industry, and have access to extensive internal financial information. Indeed, anecdotal evidence suggests audit firms leverage on a client's "inside" information to provide APTS (Beale 2004; PCAOB 2005). Cripe and McAllister (2009) also report that CFOs hire their auditor as tax consultants because they possess considerable knowledge about the client's tax structure and are able to bring cost savings and efficiencies to the client. Finally, Maydew and Shackelford (2007) provide anecdotal evidence to suggest that "it would take years to develop the firm-specific tax and business expertise that currently resides among the tax consultants at the accounting firm that has conducted its audit for decades." This suggests that, relative to other tax providers, auditors are better placed to help firms reduce effective tax rates.

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related tax payments to the taxing authority at the federal, state, and local levels, signing and filing tax returns and extensions, authorized representation of clients in administrative proceedings before a taxing authority, preparing and filing payroll and sales tax returns, and preparing the returns for employee benefit and similar plans.

<sup>6</sup> The tax planning services are wide ranging and ever expanding. The PCAOB (2004a) considers tax planning to include advice relating to executive compensation, employee benefit plans, proposed or pending tax legislation, and international tax requirements (such as trade and customs duties), advice on how to minimize liability for state and local taxes, tax consulting services to obtain tax refunds, tax planning for state and local tax credits and incentives, document searches for unclaimed property, and tax advice on tax assessments for property.

If auditors are associated with lower effective tax rates, it is more likely to be related to higher tax planning fees and not tax compliance fees. As noted above, it has been argued by the accounting profession that tax compliance services provided by the audit firm do not promote tax avoidance (PCAOB 2004b). Instead, such services are most likely to represent routine tax related tasks including the preparation of tax returns and tax payment schedules. Furthermore, Klassen et al. (2016) suggest that audit firms providing significant tax compliance services are reluctant to devise aggressive tax strategies because of reputational concerns.

Based on the arguments noted above, we propose the following related hypotheses:

**H1a:** *There is a negative association between tax planning NAS and effective tax rates.*

**H1b:** *There is no association between tax compliance NAS and effective tax rates.*

It is also possible that companies engaging their auditor for tax compliance services could be particularly complex having filing requirements in multiple taxing jurisdictions. Having the auditor help navigate complex filing requirements could reveal tax planning opportunities and help clients tax plan more efficiently even if they are not formally engaging their auditor for tax planning services. If this were the case, we would be more likely to reject H1b.

### ***Auditor-Provided Tax Services and Tax Risk Management***

Prior empirical research has also not shed light on how tax services are related to tax risk. The SEC and FASB issued regulations requiring more tax risk disclosures (e.g., Regulation S–K, Item 305(c), SEC 2005 and FIN 48). Based on these regulatory changes and the abundance of tax-related internal control weakness over the same period, accounting firms have since prescribed tax risk as a top priority for audit committees (e.g., Deloitte 2011; KPMG 2013). Given the importance and sensitivity of tax risk in recent years, KPMG (2013) recommends audit committees ensure tax positions taken by the firm do not threaten the firm’s tax risk, which would also include evaluating the costs and benefits of types of tax services procured from the auditor.

Relative to the more thoroughly examined constructs of tax avoidance or aggressiveness, the academic literature has yet to coalesce around a uniform definition of tax risk (Blouin 2014; Hutchens and Rego 2015). Furthermore, Neuman, Omer, and Schmidt (2016) suggest that tax risk as defined by academics does not necessarily equate to tax risk as defined by practitioners. For the purposes of our study, we define tax risk as the volatility in future tax outcomes, i.e. the volatility in the GAAP and cash effective tax rate. By this definition at least, we believe that on average, firms have incentives to limit their tax risk. However, it is unclear ex-ante, whether tax NAS is positively or negatively associated with tax risk.

While there have been some well publicized cases of accounting firms promoting aggressive tax strategies,<sup>7</sup> the same audit firms are also best positioned to provide effective tax strategies that are not associated with increased tax risk. Audit firms are not only privy to the latest tax technology at competitor firms, their global reach allows them to more effectively coordinate tax services across offices in different countries. With experts in both financial reporting and tax planning, this could result in audit firms reserving their most effective tax strategies (those that save taxes at lower risk) for clients that purchase both audit and tax services (Maydew and Shackelford 2007).<sup>8</sup>

Because of greater regulatory, proxy advisor, and media scrutiny during our period of study, we posit that auditors providing tax services have relatively stronger incentives to minimize tax risk. Accounting firms have also been precluded from marketing and providing aggressive tax strategies, such as tax shelters, to their audit clients (SEC 2006). In addition, because every tax

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<sup>7</sup> Some examples include the PCAOB's review of PwC's tax consulting offered to audit client Caterpillar (Rapoport, 2014), and E&Y's tax consulting work done for audit client HP (McKenna, 2013).

<sup>8</sup> This perspective was corroborated by a tax partner we interviewed at a Big 4 accounting firm who said: "The tax partner gains an understanding of the business perspective behind any tax strategy based on discussion with the audit partner. The transactions accompanying the tax position must have legitimate business purposes other than tax avoidance in order to be sustained upon audit. The audit partner helps the tax partner support the position when grey areas arise."

decision has a financial reporting consequence, it is possible that higher tax risk increases the chances of a financial reporting restatement. Auditor-tax planners face adverse litigation and reputational consequences with respect to financial restatements (Lennox 2016), and are thus implicitly motivated to provide tax planning, consulting and advisory<sup>9</sup> services that minimize tax risk. This is less likely to be the case for consultants who are not the client's auditor because their identity and contractual relationship with the client are private, and hence they would not suffer market and regulatory consequences of a tax related restatement due to a risky tax position (PCAOB 2004b).<sup>10</sup>

A maintained view in much of the contemporary tax literature is that tax avoidance potentially increases a firm's tax risk. Generally speaking, the more taxes the firm avoids by employing tax minimization strategies, the higher the exposure to risks such as tax disputes, litigation, penalties/fines etc. (Rego and Wilson 2012; Badertscher, Katz, and Rego 2013; Hasan, Hoi, Wu, and Zhang 2014; Ciconte, Donohoe, Lisowsky, and Mayberry 2016). Hence, because we predict a negative association between effective tax rates and auditor-provided tax planning services it is also possible that we will find a positive relation between these services and tax risk.

Similar arguments discussed above with respect to auditor provided tax compliance fees apply here. Specifically, a desire for auditors to reduce reputational costs could lead to a negative association between tax compliance NAS and tax risk. If tax compliance NAS are not associated with effective tax rates or cash tax savings as we predict above, then it is not clear why we would find an association with tax risk. Because there is no clear prediction for the association between

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<sup>9</sup> Consistent with AICPA (2011) guidance, we categorize tax planning, tax consulting, and tax advice as "tax planning" services.

<sup>10</sup> Firms are not required to publicly disclose the nature of tax services nor the tax fees paid to consultants who are not their auditor.

tax planning NAS, tax compliance NAS, and tax risk, we propose the following related hypotheses, both stated in the null:

**H2<sub>a</sub>:** *Tax planning NAS is not associated with the level of tax risk.*

**H2<sub>b</sub>:** *Tax compliance NAS is not associated with the level of tax risk.*

We note that implicit in our tests is the notion that a firm can have a tax risk profile that is distinct from its underlying operating risk (Blouin 2014). If this is not true, and the control variables in our regressions do a reasonable job at capturing variation in operating risk, then we would be less likely to reject H2<sub>a</sub> and H2<sub>b</sub>.

### 3. SAMPLE

Our initial samples corresponding to the four different dependent variables we employ are obtained by merging the Audit Analytics, COMPUSTAT and BoardEx databases over fiscal years 2007 to 2012. Table 1 describes the sample selection process for each of our dependent variables. Panel A documents the sample selection based on our two measures of tax avoidance, namely GAAP effective tax rates (*GETR*) and cash effective tax rates (*CETR*) analysis, while Panel B discusses the analyses for the two proxies of tax risk that are based on the volatility of GAAP and cash effective tax rates (*VOL\_OF\_GETR* and *VOL\_OF\_CETR*). Consistent with prior research, we eliminate financial services firms and firms with negative pretax income.<sup>11</sup> We also eliminate firms not incorporated in the US and “non-corporate” firms including REITs, limited partnerships, and other firms designated as “trusts.” Consistent with Guenther et al. (2017) our measures of tax volatility require five years of sequential data in the COMPUSTAT files, which further reduces our sample.

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<sup>11</sup> As expected, the sample of loss firm observations is much larger in the financial crisis period (2008 and 2009). Thus, the firms included in these years may differ from those in the non-recessionary years. Additional analyses reveal that eliminating all 2008 and 2009 observations does not influence any of our findings and conclusions.

Each of our “extended” samples consist of three types of firm-year observations: 1) observations where audit clients purchase tax services but do not disclose the breakdown of tax planning and compliance fees, 2) observations where clients purchase tax services and disclose the breakdown of tax planning and compliance fees, and 3) observations where clients purchase no tax services from the auditor. We use the extended samples to compare the association between tax outcomes and *total* auditor provided tax fees for the population of firms with available data. This allows us to compare our results to prior research examining the relation between *total* tax services fees and tax outcomes (Mills, Erickson, and Maydew 1998; Omer, Bedard, and Falsetta 2006; Cook et al., 2013; Hogan and Noga 2015).

Tests of all hypotheses require that we separate tax planning from tax compliance services. To do so we manually collect the planning and compliance fee data from the firm’s proxy statement or 10K (See Appendix A for examples of tax fee disclosures).<sup>12</sup> Our primary samples include firms that do not purchase tax services of any kind (i.e. Group 3) because the breakdown of APTS components is observable (i.e. it is zero in both cases) for these firms. We exclude firms that purchase auditor-provided tax services but do not disclose the breakdown between planning and compliance (i.e. Group 1) because tax service components are not observable for these firms.

We summarize the industry affiliations for the firm-years in our primary samples that have non-missing data on the separation between tax planning and tax compliance – including firms that report zero tax NAS. In Figure 1 we present the number of firm-years with positive APTS (i.e.

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<sup>12</sup> In 2012, Audit Analytics began collecting these tax fee breakdowns and making the information available in machine-readable form. At present, Audit Analytics has coded the tax planning and compliance variables from 2009 to 2012 for a sub-sample of firms that provide this breakdown. Given that our hand-collected sample spans from 2007 to 2012, we are able to assess whether our bifurcation methodology is similar to that of Audit Analytics for the overlapping period. Of the 2,101 observations we collected with positive tax fees and a breakdown of planning and compliance fee between 2009 and 2012, Audit Analytics provides the breakdown for 493 observations. The correlation between Audit Analytics’ and our breakdown of tax planning and compliance is 99%. The few discrepancies are Audit Analytics’ coding errors for overall tax fees. This provides some assurance that our categorization of planning and compliance fees is rigorous and accurate.

Group 2) and the number of firm-years with zero APTS (i.e. Group 3) within each industry group where industries are constructed consistent with Barth, Beaver, and Landsman (1998) and Barth, Beaver, Hand, and Landsman (1999).<sup>13</sup> Figure 1 suggests that Computers represents the plurality of our sample with Services being next in terms of proportion of our overall sample. The within industry proportions of firm-years with zero and non-zero APTS are relatively similar for the exception of Mining, Construction which both appears to have larger proportions of firm-years with zero APTS as compared to other industries. Manufacturing: Miscellaneous is also somewhat unique as it appears to have a higher proportion of firm-years with non-zero APTS than it does firm-years with zero APTS.

Figure 2 is based on the firm-years within our primary samples that have non-missing data on the separation between tax planning and tax compliance and also purchased auditor provided tax services (i.e. Group 2). Within each industry, we construct three mutually exclusive groups. Firm-years where both non-zero planning and compliance fees are non-zero, firm-years where only compliance fees are nonzero (i.e. planning fees are zero), and firm-years where only planning fees are non-zero (i.e. compliance fees are zero). Relative to other industries, the Pharmaceuticals industry is somewhat unique in that a higher proportion of firm-years are attributed to firms that procure tax compliance and tax planning services. Relative to other industries, the Extractive and Retail: Restaurant industries are somewhat unique in that a higher proportion of firm-years are attributed to firms that procure tax compliance services only.

#### **4. RESEARCH DESIGN**

Because the decision to purchase tax NAS is not random (Lassila, Omer, Shelley, and Smith 2010) our regression analyses could produce biased coefficients on our variables of interest

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<sup>13</sup> Our regressions control for time-invariant industry characteristics by using industry fixed effects based on two-digit SIC codes. We present fewer industries in our figures for tractability.

if we do not attempt to control for this selection issue. Consistent with Lassila et al. (2010) and McGuire et al. (2012), we minimize the impact of this potential confound on our regression results by first modelling the decision to purchase tax NAS. The results of this model are summarized in Table 2 - Panel A.<sup>14</sup> We then implement a Heckman (1979) correction procedure by extracting the inverse Mills ratio (*IMR*) from this selection model and including it as an additional control variable in our models described below.<sup>15</sup>

We are unable to use a similar two-stage approach to control for the decision to disclose the breakdown of auditor provided tax service fees for two reasons. First, our main hypothesis tests exclude firms that purchase APTS but do not disclose the breakdown. Second, firms that do not purchase APTS cannot be included in a selection model to control for the decision to disclose the components of APTS, and as a result, we cannot compute an inverse Mills ratio for these firms. To account for the effect of factors that affect firms' decision to provide a break-down of their tax NAS, we first model the decision to disclose the components of tax NAS (conditional on purchasing tax NAS) using the determinants described in Gal-Or, Harding, Naiker and Sharma (2018). To our knowledge, Gal-Or et al. (2018) is the only paper to model the decision to disclose the components of tax NAS. The results of this model are summarized in Table 2 - Panel B. We then include the statistically significant covariates from the decision to disclose the components of APTS in our primary regression models to control for the possibility that they are also related to our tax outcomes of interest.<sup>16</sup>

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<sup>14</sup> We find that the area under the Receiver Operator Curve (ROC) is 0.7444 suggesting that our model has reasonable discriminatory power (Hosmer and Lemeshow 2000, p. 162).

<sup>15</sup> Consistent with the guidance provided in Lennox, Francis and Wang 2012 on the implementation of the Heckman (1979) procedure, *OPPORTUNITY* serves as the exclusion variable; it is included as an independent variable in the first-stage model (i.e. decision to purchase model), but excluded from the second-stage models (i.e. tax avoidance and tax risk models).

<sup>16</sup> We find that the area under the Receiver Operator Curve (ROC) is 0.7640 suggesting that our model has reasonable discriminatory power (Hosmer and Lemeshow 2000, p. 162).

### ***Tests of H1<sub>a</sub> and H1<sub>b</sub>***

For comparability with recent and contemporaneous studies including Cook et al. (2013) and Hogan and Noga (2015), we begin our effective tax rate tests by examining the association between total tax services fees and effective tax rates in our extended and primary samples as indicated by the OLS regression model we employ in Equation (1):

$$GETR/CETR = \{TAX\_FEE\_RATIO, ACCT\_EXP, AUD\_CHG, OTH\_NAF\_RATIO, AUD\_FEE, SIZE, ROA, FOR\_D, NOL, LEV, BM, DSALES, RD, CAPX, BIG4, IMR, ACQUIRE, AUDOFF\_TAXDISC\%, Industry, Year\} \quad (1)$$

To test H1<sub>a</sub> and H1<sub>b</sub> we examine the separate effects of the tax planning and tax compliance services fees components of total tax services fees for the primary sample of firms disclosing these components of total tax services fees coupled with firms that do not purchase tax services using the OLS regression model in Equation (2):

$$GETR/CETR = \{TAX\_PLAN\_RATIO, TAX\_COMP\_RATIO, ACCT\_EXP, AUD\_CHG, OTH\_NAF\_RATIO, AUD\_FEE, SIZE, ROA, FOR\_D, NOL, LEV, BM, DSALES, RD, CAPX, BIG4, IMR, ACQUIRE, AUDOFF\_TAXDISC\%, Industry, Year\} \quad (2)$$

Following prior studies (e.g., Gupta and Newberry 1997; Mills et al. 1998; Rego 2003; Chen, Chen, Cheng, and Shevlin 2010, Chyz and Gaertner 2018), our first dependent variable in Equations (1) and (2) capture GAAP effective tax rates (*GETR*). Besides researchers, tax policy advocacy groups such as Citizens for Tax Justice (CTJ) also use the ETR measure to identify U.S. firms with relatively low tax burdens. Testimony from Brunswick Corporation before the House Ways and Means Committee (Zelisko 2014) provides anecdotal evidence that corporations consider the reduction in ETR when devising tax strategies.<sup>17</sup> GAAP effective tax rates are expected to capture tax minimization strategies stemming from permanent book-tax difference and

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<sup>17</sup> This anecdotal evidence is supported by a recent survey conducted by Graham, Hanlon, Shevlin, and Shroff (2014). The authors find that 47% of the tax executives in publicly traded firms state that top management values the GAAP ETR more than cash taxes paid, and in another 37 percent of public firms, the two metrics are equally valued by top management.

reflect the use of tax-related accruals that affect accounting earnings (Hanlon and Heitzman 2010). We follow prior studies and define GAAP effective tax rates as total tax expense scaled by pre-tax book income less special items. One limitation of *GETR* is that it does not capture tax strategies that defer taxes (e.g., use of accelerated depreciation for tax purposes). Our second proxy of effective tax rates does not suffer from this problem as it is based on cash taxes paid (i.e., cash tax savings) and is not affected by changes in tax accounting accruals. This measure, denoted *CETR*, is defined as the ratio of cash taxes paid to pretax income (excluding special items).

Because strategies are likely to be more effective if deployed in periods prior to when tax payments are due, our measures of tax services fees are lagged (prior year) total tax fee ratio (*TAX\_FEE\_RATIO*) in Equation (1) and the planning (*TAX\_PLAN\_RATIO*) and compliance (*TAX\_COMP\_RATIO*) components in Equation (2).<sup>18</sup> Our control variables include the percentage of audit committee members with financial accounting expertise when the tax services were purchased (*ACCT\_EXP*), because prior studies suggest that accounting experts influence corporate tax planning (Robinson, Xue, and Zhang 2012) and the extent of tax services acquired from the auditor (Naiker, Sharma, and Sharma 2013). We also include an indicator variable capturing whether the company switched auditors (*AUD\_CHG*) in the current or prior year, because the knowledge used to enhance the tax plan is likely gained over time.<sup>19</sup> We control for other non-audit fees<sup>20</sup> (i.e., non-tax NAS) divided by total fees paid to the auditor (*OTH\_NAF\_RATIO*), and the natural logarithm of audit fees (*AUD\_FEE*) to ensure that the tax

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<sup>18</sup> The results are similar but weaker if we use the contemporaneous version. This supports the argument presented in Hogan and Noga (2015) that tax NAS is associated with the long term tax strategy of the firm.

<sup>19</sup> The results are unchanged when we use a continuous measure of auditor tenure.

<sup>20</sup> These fees capture audit-related fees and all other non-audit fees. Audit-related fees consist of fees billed for assurance and related services such as due diligence in connection with mergers and acquisitions, internal control reviews and assistance, and financial statement audits of employee benefit plans. It is less clear what types of services are classified as “other non-audit fees”. However, such fees may capture billings for risk management advisory services, assistance with continuing education and training, and provision of information relating to market conditions.

planning services rather than other auditor services are driving our results. We control for auditor size because larger accounting firms are more likely to provide higher quality services (DeAngelo 1981) and draw on a larger base of tax knowledge (Maydew and Shackelford 2007).

We control for firm size captured by the natural logarithm of total assets (*SIZE*) and firms reporting foreign income (*FOR\_D*) because Mills et al. (1998) suggest that larger multinational firms have more tax-planning opportunities. Consistent with Mills et al. (1998), we also control for leverage (*LEV*) and capital expenditure (*CAPX*) due to interest and depreciation deductions. Further, we control for the change in sales (*DSALES*) because growing firms are more likely to make larger investments in depreciable assets. We control for research and development intensity (*RD*) because of the associated investment-tax shield (Gupta and Newberry 1997). Since prior studies report that profitability influences tax avoidance (Gupta and Newberry 1997; Rego 2003; Dyreng et al. 2008), we control for return on assets (*ROA*). Because the presence of net operating loss carryforwards and growth opportunities influence incentives to avoid taxes (Rego 2003; Frank, Lynch and Rego 2009), we include an indicator variable capturing the presence of net operating losses (*NOL*) and the book to market ratio (*BM*). *IMR* is the inverse Mills ratio derived from modelling firms' decision to purchase APTS described above and summarized in Table 2 - Panel A. Our audit firm size variable, *BIG4*, is set to 1 if the auditor is one of the Big-4 auditors (E&Y, D&T, PWC and KPMG), and 0 otherwise. *ACQUIRE* is an indicator variable set equal to 1 if the firms had an acquisition in the current or previous fiscal year and 0 otherwise. *AUDOFF\_TAXDISC%* is the number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS. Finally, we include industry (two-digit SIC) and year fixed effects in order to capture differences in tax avoidance across industries and time.

### ***Tests of H2<sub>a</sub> and H2<sub>b</sub>***

We test H2 by examining the association between tax planning NAS, tax compliance NAS, and tax risk. We measure tax risk using with the volatility in both GAAP and cash effective tax rates. Consistent with Guenther et al. (2017), we measure tax volatility as the standard deviation of annual cash ETRs (*VOL\_OF\_CETR*) over the current and future four years, where a greater standard deviation (i.e., larger values of *VOL\_OF\_CETR*) implies greater tax risk.

Consistent with our tests for H1, we first examine the association between total tax services fees and tax risk in our extended and primary samples using the following OLS regression model (Equation 3):

$$VOL\_OF\_GETR/CETR = \{TAX\_FEE\_RATIO, ACCT\_EXP, AUD\_CHG, OTH\_NAF\_RATIO, AUD\_FEE, BIG4, SIZE, ROA, FOR\_D, NOL, LEV, DSALES, RD, CAPX, VOL\_OF\_PTBI, ESO\_BENEFITS, IMR, ACQUIRE, AUDOFF\_TAXDISC\%, Industry, Year\} \quad (3)$$

We then test H2<sub>a</sub> and H2<sub>b</sub>, which examine the separate associations of tax planning and tax compliance services fees on tax risk, by employing the following model (Equation 4) for our primary sample<sup>21</sup>:

$$VOL\_OF\_GETR/CETR = \{TAX\_PLAN\_RATIO, TAX\_COMP\_RATIO, (GETR \text{ or } CETR), ACCT\_EXP, AUD\_CHG, OTH\_NAF\_RATIO, AUD\_FEE, BIG4, SIZE, ROA, FOR\_D, NOL, LEV, DSALES, RD, CAPX, VOL\_OF\_PTBI, ESO\_BENEFITS, IMR, ACQUIRE, AUDOFF\_TAXDISC\%, Industry, Year\} \quad (4)$$

The control variables also remain similar to those employed in Equations (1) and (2) as the factors influencing firms' tax payments influence effective tax rates, cash tax savings and tax risk.

Consistent with Guenther et al. (2017), we also control for the standard deviation of pre-tax book

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<sup>21</sup> We do not capture the lagged versions of the main independent variables of interest because in the case of tax volatility, the variable construction induces the lead-lag analysis. *VOL\_OF\_CETR* and *VOL\_OF\_GETR* capture the sustainability of current positions for five future years. Unlike tax strategies which could take time to achieve results, we expect tax services fees to have a more immediate impact on the recognition of tax uncertainty. However, the results are robust to the lagged auditor fee variables for either dependent variable.

income over the current and future four years (*VOL\_OF\_PTBI*) and the excess tax benefit of stock options scaled by lagged total assets (*ESO\_BENEFITS*). Finally, we control for effective tax rate reductions (*GETR*) or cash tax savings (*CETR*)

## 5. EMPIRICAL RESULTS

### *Descriptive Statistics*

Table 3 presents a series of descriptive statistics. Panel A summarizes basic descriptive statistics for the variables in our effective tax rate and tax volatility tests. Panel B summarizes the tax fee ratios and raw planning fees for our full sample and by tax ratio ranks for both *TAX\_PLAN\_RATIO* and *TAX\_COMPLY\_RATIO* across our test samples. The statistics reported in Panel A reveal a mean (median) GAAP effective tax rate (*GETR*) range of 30.8% to 31.4% (33.0% to 33.2%%) across our primary samples, which is consistent the values reported in prior studies using this measure (e.g., Chen et al. 2010; Cook et al., 2013). We find that the average amount paid for tax planning services as a proportion of all audit fees (i.e. *TAX\_PLAN\_RATIO*) varies between 2.3% to 2.4% and that the average amount paid for tax compliance services (i.e. *TAX\_COMP\_RATIO*) varies between 3.2% to 3.7% across our samples. Panel B reveals that these ratios represent average raw planning fee ranges of \$102,317 to \$120,974 and average raw compliance fee ranges of \$146,451 to \$186,234 in our full sample. As noted below, when we isolate firms with non-zero tax NAS the magnitudes of these amounts increase.

Table 3 Panel B presents additional detail on tax compliance and tax planning fees. Specifically, we present fee ratios and raw fee amounts by *TAX\_PLAN\_RATIO* and *TAX\_COMP\_RATIO* “ranks” respectively. For the purpose of this analysis we assign firms with either zero tax planning or zero tax services NAS fees to Rank 1. We then sort the remaining firms with non-zero tax planning or tax compliance NAS to Ranks 2 through 4. By design, once we

focus on the firms with non-zero tax NAS fees, averages increase substantially. We find that the average amount paid for tax planning services as a proportion of all audit fees within the highest *TAX\_PLAN\_RATIO* rank (Rank 4) varies between 18.5% and 19.7%. The average amount paid for tax compliance services within the highest (i.e. *TAX\_COMP\_RATIO*) rank varies between 19.6% and 20.2% across our samples. These ratios represent average raw planning fee ranges of \$872,214 to \$965,487 and average raw compliance fee ranges of \$894,983 to \$969,252. Overall, there is substantial variation in fees paid to the auditor for tax planning and tax compliance with many firms paying economically significant sums to their auditors for these services.

### ***Univariate Analysis***

Table 4 presents Pearson correlation coefficients between our dependent and independent variables of interest. *TAX\_PLAN\_RATIO* and *TAX\_COMP\_RATIO* are both highly positively correlated with the total tax fee ratio (i.e. *TAX\_FEE\_RATIO*) but are much less strongly correlated with each other. We find univariate support for H1<sub>a</sub> in that *TAX\_PLAN\_RATIO* is negatively and significantly correlated with GAAP effective tax rates (*GETR*) and cash effective tax rates (*CETR*) thus providing support for H1<sub>a</sub>. When assessing the relation with *TAX\_PLAN\_RATIO* we document a negative and significant correlation with both *VOL\_OF\_CETR* and *VOL\_OF\_GETR* thus providing support to reject H2<sub>a</sub>. We also find that *TAX\_COMP\_RATIO* is negatively and significantly correlated with the *GETR* but not significantly correlated with *CETR*. Thus there is no definitive univariate evidence that would allow us to either reject or fail to reject H1<sub>b</sub>. We also find a negative but insignificant correlation between *TAX\_COMP\_RATIO* and both *VOL\_OF\_CETR* and *VOL\_OF\_GETR*. This provides some univariate support in failing to reject H2<sub>b</sub>. We find that our effective tax rate measures are positively correlated with each other, but that they still have substantial independent variation as the correlation coefficient between *GETR* and

*CETR* is 0.2860 (p-value < 0.001). Our tax risk measures are also highly correlated but also exhibit some independent variation.<sup>22</sup>

In Figures 3 and 4 we summarize mean realizations of our four tax outcomes by tax planning ratio ranks (i.e. ranks of *TAX\_PLAN\_RATIO*) and tax compliance ratio ranks (i.e. ranks of *TAX\_COMP\_RATIO*). We also present tests for whether the difference in means between the tax outcome in Rank 4 and Rank 1, and also the difference in means between Rank 4 and Rank 2, are statistically different from zero. Figure 3 presents results of our effective tax rate measures (*GETR* and *CETR*) and Figure 4 presents results with our tax risk measures (*VOL\_OF\_GETR* and *VOL\_OF\_CETR*). We use the same approach that we do in Table 3 Panel B above, and assign firms with either zero tax planning or zero tax services NAS fees to their respective Rank 1. We then sort the remaining firms with non-zero tax planning or tax compliance NAS to their respective Ranks 2 through 4.

We first refer to Figure 3 to discuss any evidence of support for H1<sub>a</sub> or evidence that suggests we should reject H1<sub>b</sub>. H1<sub>a</sub> predicts that the differences in effective tax rates between the highest *TAX\_PLAN\_RATIO* ranks and the lower rank should be negative and significant for *GETR* and *CETR*. In all cases, these differences are negative, but they are only statistically significant for *GETR*. This provides some limited support for H1<sub>a</sub>.

H1<sub>b</sub> predicts no association between tax compliance NAS and effective tax rates. Our univariate tests present very mixed results. In the two cases where rank differences are significant, the sign of the difference is not the same for *GETR* and *CETR*. In the other two cases, the

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<sup>22</sup> In untabulated tests we also assess correlations within all model covariates. None of the correlation coefficients are sufficiently large to affect the study's conclusions. The highest correlation was between *SIZE* and *AUDFEE* (0.83). Our findings for the tax NAS variables remain robust when either *SIZE* or *AUDFEE* is excluded from the analyses. All variance inflation factors in our models (not tabulated) are below the threshold of 10 beyond which multicollinearity may be a problem (Kennedy 1992).

differences in ranks are not statistically significant. This does not provide us with evidence to reject H2<sub>a</sub>.

We refer to Figure 4 to discuss any evidence to suggest that we should reject H2<sub>a</sub> and H2<sub>b</sub>. H2<sub>a</sub> predicts no association between tax planning NAS and tax risk. For both *VOL\_OF\_GETR* and *VOL\_OF\_CETR* the differences in ranks are all negative. However, these are only significant when we compare Rank 1 to Rank 4. This provides some support for rejecting H2<sub>a</sub>.

H2<sub>b</sub> predicts no association between tax compliance NAS and volatilities in effective tax rates. Three of the four rank differences are positive, but none of the differences are statistically significant. These results do not allow us to reject H2<sub>b</sub>.

While these summary statistics and univariate tests provide some evidence that tax planning services procured from the auditor are associated with lower effective tax rates, higher cash tax savings and lower tax risk, these findings should be interpreted with caution as they are obtained without controlling for other factors influencing tax avoidance and tax risk.

### ***Effective Tax Rate Multivariate Results***

Table 5 reports the regression results for tests of H1a and H1b. Columns (1) through (3) reports results examining associations between APTS and *GETR*. Columns (4) through (6) reports results examining associations between APTS and *CETR*. The analysis reported in Columns (1) and (4) considers the effect of total tax fees (*TAX\_FEE\_RATIO*) in an extended sample, which includes firms in the main sample (firms that do not purchase tax services from their auditor and those that disaggregate the planning and compliance components of their total tax fees) as well as firms that purchase but do not disclose the components of their total tax services fees. The analysis in Columns (2) and (5) evaluates the impact of total tax fees (*TAX\_FEE\_RATIO*) in the main sample of firms that either do not purchase APTS or purchase APTS and report their components.

Columns (3) and (6) considers the effect of tax planning (*TAX\_PLAN\_RATIO*) and tax compliance services (*TAX\_COMP\_RATIO*) in the main sample.

Focusing first on the effective tax rate analysis (*GETR*) and tests of H1a we find the coefficient on *TAX\_FEE\_RATIO* in Columns (1) and (2) is negative and significant ( $p$ -value  $< 0.10$  and  $< 0.01$ , respectively). These results indicate lower effective tax rates for firms that procure greater total tax services from their auditor and support the findings of Cook et al. (2013) and Hogan and Noga (2015) who find that changes in total tax fees that they employ as a proxy for tax planning fees is positively associated with changes in tax avoidance. The negative and significant ( $p$ -value  $< 0.01$ ) coefficient on *TAX\_PLAN\_RATIO* and the insignificant coefficient on *TAX\_COMP\_RATIO* in Column (3) verify that the tax planning component of total tax services is indeed responsible for the results observed in Columns (1) and (2), thus supporting H1a.<sup>23</sup>

Turning to the cash tax savings regressions (*CETR*) we find no evidence of a significant association between total tax services (*TAX\_FEE\_RATIO*) and cash tax savings in either Columns (4) or (5). In Column (6) we find that separating total tax services into its tax planning and tax compliance components reveals an association between APTS and cash tax savings that is driven by tax planning services. This is evidenced by the negative and significant ( $p < 0.10$ ) coefficient on *TAX\_PLAN\_RATIO*. As in the effective tax rate regressions, the tax compliance services

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<sup>23</sup> The results reported in Columns (1) through (3) reveal negative and significant ( $p < 0.10$ ) associations between effective tax rate reductions and purchase of other NAS (*OTH\_NAF\_RATIO*) in our primary sample, audit fees (*AUD\_FEE*), firm size (*SIZE*), foreign operations (*FOR\_D*), net operating losses (*NOL*) and research and development expenditure (*RD*). We also find positive and significant associations between effective tax rate reductions and the presence of Big 4 auditors (*BIG4*) but only in the extended sample, and firm profitability (*ROA*) across all three specifications. Further, the coefficients on the statistically significant control variables are all of the predicted sign with the exception of *BIG4*. We find that the inverse Mills ratio derived from the decision to purchase APTS model is not statistically significant in any of the first three columns.

variable is not related to cash tax savings as evidenced by the insignificant coefficient on *TAX\_COMP\_RATIO*.<sup>24</sup>

In addition to being statistically significant, we also find that these relations are economically significant. For example, within our *GETR* sample, a one standard deviation increase in the tax planning services fee ratio, all else equal, is associated with a 0.62% drop in the effective tax rate ( $-0.103 \times 0.059$ ). For the average firm in our *GETR* sample, this translates to approximately a \$3.16M reduction in tax expense ( $0.0061 \times 510.812$ ). A similar one standard deviation increase in raw tax planning services fees paid equates to \$531,299. This represents a return on investment of approximately \$5.95 in GAAP tax expense saved for every dollar invested in auditor-provided tax planning ( $\$3.16 / \$0.531299$ ). With respect to *CETR*, a one standard deviation increase in the tax planning services fee ratio, all else equal, is associated with a 0.53% drop in the cash effective tax rate ( $-0.089 \times 0.059$ ). For the average firm in our sample, this translates to an approximate \$2.71M reduction in cash taxes paid ( $0.0053 \times 510.812$ ). A one standard deviation increase in raw tax planning services fees paid represents a return on investment of approximately \$5.10 in cash taxes saved for every dollar of tax planning services fee paid to the auditor ( $\$2.71\text{M} / \$0.531299$ ).<sup>25</sup>

### ***Tax Risk Multivariate Results***

Table 6 Panel reports the results for tests of H2<sub>a</sub> and H2<sub>b</sub> that consider the influence of tax planning NAS on tax risk. In columns (1) through (3) tax risk is measured by the volatility in the

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<sup>24</sup> We find that many of our control variables are consistently negative and statistically significant: presence of accounting experts on the audit committee (*ACCT\_EXP*), firm size (*SIZE*), leverage (*LEV*), research and development expenditure (*RD*), and capital expenditure (*CAPX*). Two control variables, change in auditor (*AUD\_CHG*) and firm profitability (*ROA*), are positive and significantly related to cash tax savings but not necessarily across all columns. The inverse Mills ratio (*IMR*) is consistently negative and significant suggesting it is appropriate to control for the decision to purchase tax NAS when analyzing variation in cash effective tax rates.

<sup>25</sup> These elasticities are similar to those documented by Mills et al. (1998) who found a \$4 return for every \$1 invested in tax planning within a sample of 365 large U.S. corporations in 1991. Differences in return on investment could be attributed to sample composition differences, time period differences, and heterogeneity in tax providers (i.e. we examine auditor provided tax planning whereas Mills et al. (1998) examine value of firm investment in tax planning paid to accountants, attorneys, and consultants).

GAAP effective tax rate (*VOL\_OF\_GETR*). In columns (4) through (6) tax risk is measured as the volatility in cash effective tax rate (*VOL\_OF\_CETR*). We report the results based on controlling for either effective tax rate reductions (*GETR*) in columns (1) through (3) or cash tax savings (*CETR*) in columns (4) through (6). We note that controlling for *CETR* instead of *GETR* in columns (1) through (3) does not change our inferences. Similarly, controlling for *GETR* instead of *CETR* in columns (4) through (6) does not alter our inference.

As we do for our effective tax rate tests, we commence by examining the impact of total tax services on tax risk using an extended sample (Columns (1) and (4)) and our main sample (Columns (2) and (5)), before examining the separate effects of tax planning services and tax compliance services on tax risk (Columns (3) and (6)).

Similar to our findings for cash tax savings, the results reported in Table 6 indicate that total tax services (*TAX\_FEE\_RATIO*) is not significantly associated with tax risk in our extended and main samples. However, the results reported in Columns (3) and (6) indicate that tax planning services (*TAX\_PLAN\_RATIO*) is negatively and significantly ( $p < 0.05$ ) related to tax risk.<sup>26</sup> We also find that tax risk is positively associated with cash effective tax rate levels (*CETR*). In other words, firms paying lower cash tax rates tend to have lower volatilities in cash tax rates. We do not find the same relation with respect to GAAP effective tax rates and the volatility in GAAP effective tax rates in any of the columns (1) through (3). We also do not document any relation between tax compliance fees (*TAX\_COMP\_RATIO*) and tax risk.

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<sup>26</sup> The results reported in Table 6 reveal significant ( $p < 0.10$ ) associations between tax risk (when using tax volatility as our proxy) and several control variables. Specifically, we find that tax risk is consistently positively associated with audit fees (*AUD\_FEE*), volatility of pre-tax book income (*VOL\_OF\_PTBI*), and consistently negatively related to firm size (*SIZE*), firm profitability (*ROA*), foreign source income (*FOR\_D*), and research and development expenditure (*RD*). These findings are consistent with Guenther et al. (2017).

Our analysis provides support to reject H2<sub>a</sub> but no support that would allow us to reject H2<sub>b</sub>. Taken together with our tax avoidance results, our findings suggest that the purchase of more tax planning services allow firms to benefit from both more tax savings and lower levels of tax risk on average. However, we are not able to say whether higher levels of tax planning fees are simultaneously associated with lower effective tax rates and tax risk. In other words, we cannot say whether higher tax planning fees help a firm lower tax rates and tax risk at the same time. We examine this next.

## **6. ADDITIONAL ANALYSES**

### ***Simultaneous Tax Risk Management and Reductions in Effective Tax Rates***

We investigate the simultaneous effects of tax planning services on tax avoidance and tax risk by pooling our samples and creating quartile ranks (by year) for firms based on their effective tax rate and tax risk variable realizations. We then sort firm-years into sixteen mutually exclusive portfolios – a 4 by 4 matrix – that pairs an effective tax rate outcome rank with every rank for a tax risk outcome (and vice-versa). For this analysis, we are interested in the mean fee ratio within each portfolio. We replicate this process four times so that we can pair all effective tax rate outcomes with all tax risk outcomes. We also present a similar set of portfolio sorts where we focus on raw tax planning fees instead of the tax planning fee ratio. These tests are summarized in Table 7. If higher levels of tax planning fees are simultaneously associated with lower effective tax rates and lower tax risk, then we should see the highest fee ratios and raw fees concentrated in the upper left quadrant of each four by four matrix (see the bolded outlines on the matrices in Table 7). For ease of interpretation, we bold the three largest fee ratios and raw fee amounts in each matrix.

In all but one case (*CETR* paired with *VOL\_OF\_GETR*) at least two of the three highest fee ratios and raw fee realizations are in the upper left quadrant, and when it is not, it is directly adjacent. Although these tests are univariate and do not control for other covariates, they nevertheless provide some support for the assertion that higher tax planning fees are associated with an ability to simultaneously reduce effective tax rates and tax risk.

### *Changes Analysis*

A limitation of our data is that tax planning and tax compliance fees are quite “sticky” over our short sample period. Running a regression of current tax planning NAS fees on lagged tax planning NAS fees yields a persistence parameter of 0.8627 and an r-squared of 0.6937.<sup>27</sup> Running a regression of current tax compliance NAS fees on lagged tax compliance NAS fees yields a persistence parameter of 0.760 and r-squared of 0.7103.<sup>28</sup> As a result, a changes analysis is likely to exhibit low power. Nevertheless, in an effort to improve identification, we repeat the tests of  $H1_a$  and  $H1_b$  after computing changes in our model’s continuous variables and summarize our results in Table 8. For dichotomous model variables we use the current period’s level. This analysis is not feasible for our measures of tax volatility because they are forward looking measures where periods would overlap.

We measure the change in tax fees two ways. First we measure continuous changes as amounts in  $t$  less amounts in  $t-1$  and with above median change indicator variables. To construct the median change indicators, we identify observations where fees increased from  $t-1$  to  $t$ . Then we take the median of these observations. If a firm-year increase is above the fiscal-year median then the indicator variable is set to 1, and zero otherwise. Although somewhat weaker statistically, we continue to document some support for  $H1_a$  while also failing to reject  $H1_b$ .

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<sup>27</sup> Using the current and lagged planning ratios yields a persistence parameter of 0.786 and an r-squared of 0.537.

<sup>28</sup> Using the current and lagged compliance ratios yields a persistence parameter of 0.859 and an r-squared of 0.720.

### ***Periods “With” and “Without” Tax Planning***

As an alternative to a standard changes analysis, we search our sample for firms that had consistent periods where they did not procure any APTS (planning or compliance) followed by periods where they consistently engaged their auditor for tax planning services. Doing so yields a sample of 86 firms for which we can assess changes in effective tax rates between periods “with” and “without” tax planning NAS.<sup>29</sup> The results of our analysis for these firms is summarized in Table 9.

We begin our analysis by taking the average, by firm, of *CETR* and *GETR* for the period without tax planning NAS and the period with tax planning NAS. This yields 86 separate firm-specific without tax planning NAS effective tax rate averages and 86 firm-specific with tax planning NAS effective tax rate averages. We pool these firm specific averages for the with planning periods and for the without planning periods. We present the mean and medians of these pooled period averages in Table 9. We also present the mean and median levels of raw fees collected in the period with tax planning NAS. In all cases, periods with tax planning are characterized by lower effective tax rates.

Finally, we present a paired sample analysis. Here we test that the average of the by firm difference in *GETR* and *CETR* between periods with and without tax planning NAS (measured as periods after tax planning NAS less periods before tax planning NAS) is negative and statistically different from zero. Using a two-tailed test we find that this difference is indeed negative and statistically different from zero for both *GETR* and *CETR*.

### ***Joint Provision of Tax Compliance and Tax Planning***

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<sup>29</sup> This analysis is not feasible for our measure of tax volatility measures because they are forward looking and “without” tax planning periods would be comingled with “with” tax planning periods.

We explore the possibility that benefits of tax compliance services arise when they are jointly provided with tax planning. With our main analyses we document that effective tax rates and cash tax savings are negatively associated with tax planning services, holding constant the variation in tax compliance. While this approach helps to isolate the effect of the variation in tax planning from the variation in tax compliance, it is possible that the effect of tax planning services can vary depending on whether firms procure tax planning services in isolation or in conjunction with tax compliance services. Our conversations with Big 4 tax partners suggest that external auditors are hesitant to help their clients generate tax savings unless they are also involved in the company's tax compliance work. Their reluctance to do so stems from a third-party provider of tax compliance services misinterpreting the tax planning strategies and to protect their proprietary tax strategies.<sup>30</sup> Regardless of the specific source, the prediction is that external audit firms are likely to help their clients realize greater effective tax rate reductions and higher cash tax savings when they provide tax planning services and are involved in some capacity in tax compliance work.<sup>31</sup> To formally evaluate this prediction, we repeat our regression analyses in Table 5 after replacing our test variable *TAX\_PLAN\_RATIO* with two variables representing the provision of tax planning services in isolation of (*TAX\_PLAN\_RATIO\_WOCOMP*), and in conjunction with, tax compliance services (*TAX\_PLAN\_RATIO\_WCOMP*).<sup>32</sup> The results reported in Table 10

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<sup>30</sup> A tax partner from a Big 4 accounting firm stated that “the compliance service is the “last line of defense.” It is a way of articulating the tax plan on a year by year basis. If another firm does the tax compliance work, they may not interpret the plan correctly.” This suggests that tax planning and compliance services are both integral in the tax rate minimization strategy.

<sup>31</sup> Untabulated analysis shows that the proportion of companies with non-zero APTS that purchase tax planning over our sample period varies between 55% and 62%. The proportion that purchase tax compliance varies between 75% and 86%. The proportion that purchase only tax planning, only tax compliance, or both varies between 14% and 25%, 38% and 45%, and 41% and 22% respectively.

<sup>32</sup> These variables allow the association between tax planning and our outcomes of interest to vary differently when the client also procures tax compliance and when the company only purchases tax planning. Thus, *TAX\_PLAN\_RATIO\_WCOMP* is essentially *TAX\_PLAN\_RATIO* multiplied by an indicator variable that equals 1 when the company also purchases tax compliance. Similarly, *TAX\_PLAN\_RATIO\_WOCOMP* is essentially *TAX\_PLAN\_RATIO* multiplied by an indicator variable that equals 1 when the company only purchases tax planning. Because we omit the main effects of the indicator variables denoting compliance, or no compliance fees purchased,

indicate a negative and significant ( $p < 0.10$  or better) association between *TAX\_PLAN\_RATIO\_WCOMP* and *GETR* and *CETR*, respectively. Conversely, we find that tax planning services is not related to these tax outcomes when purchased without tax compliance services (*TAX\_PLAN\_RATIO\_WOCOMP*).

For the sake of consistency, we also undertake comparative analyses to assess the separate effects of tax compliance services in isolation (*TAX\_COMP\_RATIO\_WOPLAN*) and in conjunction with tax planning services (*TAX\_COMP\_RATIO\_WPLAN*). The results from these analyses, also reported in Table 10, indicate that variation tax compliance services remains insignificantly associated with effective tax rates regardless of whether they are purchased with or without tax planning services. As evident in Table 10 the beneficial effect of tax planning services in conjunction with tax compliance services (*TAX\_PLAN\_RATIO\_WCOMP*) on effective tax rates and cash tax savings are robust to controlling for both *TAX\_COMP\_RATIO\_WPLAN* and *TAX\_COMP\_RATIO\_WOPLAN*.

## 7. CONCLUSION

Our study provides new insights into the role of two different types of tax services that auditors provide to their clients to help them realize tax savings and lower tax risk. Specifically, we hand-collect components of tax services fee data to investigate the distinct effects of tax planning and tax compliance services on effective tax rates and tax risk. We find statistically and economically significant negative associations between tax planning services and four different proxies for effective tax rates and tax risk management. In contrast, we find no significant relationships between tax compliance services and all our proxies for effective tax rate and tax risk

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the main effects of purchasing compliance services, or purchasing tax planning services only, are captured by *TAX\_PLAN\_RATIO\_WCOMP* and *TAX\_PLAN\_RATIO\_WOCOMP* respectively. This specification makes it easier to interpret our results.

management in multivariate regression analysis. We also find that some of the benefits of tax planning services are more likely to be realized when the auditor is also contractually involved in tax compliance work.

Our results provide some evidence that audit clients procuring tax planning services from their auditors minimize tax rates and extract cash tax savings without increasing tax risk. These findings support the profession's arguments on the benefits of tax planning services and imply that further regulatory bans or limitations on auditor-provided tax services may diminish these benefits. Our results also imply that the disclosure of information on the nature of tax services acquired from the auditor can provide useful information to stakeholders on the potential impact of various tax services on the tax avoidance strategies of firms.

Our findings are subject to a number of caveats. First, like most archival studies, we document associations and not causation. Second, our ability to separately examine the effects of fees paid for auditor-provided tax planning and tax compliance services is only as effective as the accuracy of the disclosures firms provide to distinguish between these services within their portfolio of total auditor-provided tax services.<sup>33</sup> Third, due to unavailability of data, we are unable to directly test the effects of tax planning fees paid to a third party who is not the firm auditor, nor are we able to consider differences in tax reporting implications between audit clients and non-audit clients purchasing tax planning services from the same audit firm provider. Fourth, we note that the firms in our sample voluntarily disclose their tax fee components. As such, we are unable to ascertain whether our results can be extrapolated to clients purchasing tax services that opt to not disclose the components of total tax fees. Finally, we do not examine how auditor and client

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<sup>33</sup> According to a former audit partner and current audit committee member, the disclosures in the proxy statement are not audited, but are reviewed for reasonableness. In most cases, the auditor provides the breakdown of tax services during the first year of the audit. The client keeps tracks of fees for each type of service in subsequent audits. The auditor checks these numbers for reasonableness on an ongoing basis.

characteristics and incentives differentiate firms that procure tax planning NAS only from those that purchase both tax planning and tax compliance NAS as it is beyond the scope of our study.

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## Appendix A Examples of Tax Fee Disclosures

*Consistent with the AICPA (2011) definition, we categorize tax compliance and tax preparation as “tax compliance” services and tax planning, tax consulting, and tax advice as “tax planning” services*

### **General Electric Proxy Statement (2010)** *(No breakdown of planning and compliance services)*

“Tax fees (\$8 Million) are fees for tax compliance, tax advice and tax planning”

Categorization: Group 1

*Tax\_Fee\_Breakdown* = 0

*Tax Compliance* = N/A

*Tax Planning* = N/A

### **ExxonMobil Proxy Statement (2009)** *(Only Compliance disclosed)*

“PwC assisted various ExxonMobil affiliates with the preparation of local tax filings and related tax services. These fees were \$1.6 million for 2009 (versus \$1.4 million in 2008). PwC also assisted in preparing tax returns for individual ExxonMobil expatriate employees. These fees were \$0.3 million for 2009 (versus \$2.6 million for 2008).”

Categorization: Group 2

*Tax\_Fee\_Breakdown* = 1

*Tax Compliance* = \$1.9 million<sup>34</sup>

*Tax Planning* = \$0

### **Albemarle Proxy Statement (2007)** *(Dollar breakdown of planning and compliance services)*

“Tax fees include original and amended tax returns, studies supporting tax return amounts as may be required by Internal Revenue Service regulations, claims for refunds, assistance with tax audits and other work directly affecting or supporting the payment of taxes (“compliance”), and planning, research and advice supporting our efforts to maximize the tax efficiency of its operations (“planning”). For the fiscal years ended December 31, 2007 and December 31, 2006, payments for compliance totaled \$353,000 and \$460,000, respectively, and payments for planning were \$30,000 and \$198,000, respectively.

Categorization: Group 2

*Tax\_Fee\_Breakdown* = 1

*Tax Compliance* = \$460 thousand

*Tax Planning* = \$198 thousand

### **Ford Proxy Statement (2010)** *(Percentage breakdown of planning and compliance services)*

“The Company paid PricewaterhouseCoopers \$3.6 million and \$4.1 million for tax services for the years ended December 31, 2010 and 2009, respectively. The types of tax services provided included assistance with tax compliance and the preparation of tax returns, tax consultation, planning and implementation services, assistance in connection with tax audits, and tax advice related to mergers, acquisitions and divestitures. Of the fees paid for tax services, the Company paid 72% and 59% for tax compliance and the preparation of Company tax returns in 2010 and 2009, respectively.”

Categorization: Group 2

*Tax\_Fee\_Breakdown* = 1

*Tax Compliance* = \$2.592 million (72% of \$3.6 million)

*Tax Planning* = \$1.008 million (28% of \$3.6 million)

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<sup>34</sup> It is common for the entity level tax preparer to assist with the returns of expatriated employees. Thus, per the AICPA definition of tax compliance (AICPA 2011), expatriate tax services are considered tax compliance.

<b>Appendix B Variable Definitions</b>	
<b>Variable Name</b>	<b>Variable Definition [source]</b>
<b>Dependent Variables</b>	
<i>GETR</i>	The effective tax rate calculated as total tax expense [COMPUSTAT data TXT] divided by pre-tax book income [PI] less special items [SPI].
<i>CETR</i>	The cash effective tax rate calculated as cash taxes paid [TXPD] divided by pre-tax book income [PI] less special items [SPI].
<i>VOL_OF_GETR</i>	The standard deviation of one-year <i>GETR</i> over the time period t to t+4.
<i>VOL_OF_CETR</i>	The standard deviation of one-year <i>CCETR</i> over the time period t to t+4.
<b>Independent Variables of Interest</b>	
<i>TAX_FEE_RATIO</i>	Fees paid for auditor provided tax services divided by total fees paid to the auditor. [Audit Analytics]
<i>TAX_PLAN_RATIO</i>	Auditor provided tax planning services fees divided by total fees paid to the auditor.
<i>TAX_PLAN_RATIO_WCOMP</i>	Auditor provided tax planning services fees divided by total fees paid to the auditor when <i>TAX_COMP_RATIO</i> > 0, and equal to 0 otherwise.
<i>TAX_PLAN_RATIO_WOCOMP</i>	Auditor provided tax planning services fees divided by total fees paid to the auditor when <i>TAX_COMP_RATIO</i> = 0, and equal to 0 otherwise.
<i>TAX_COMP_RATIO</i>	Auditor provided tax compliance services fees divided by total fees paid to the auditor.
<i>TAX_COMP_RATIO_WPLAN</i>	Auditor provided tax compliance services fees divided by total fees paid to the auditor when <i>TAX_PLAN_RATIO</i> > 0, and equal to 0 otherwise.
<i>TAX_COMP_RATIO_WOPLAN</i>	Auditor provided tax compliance services fees divided by total fees paid to the auditor when <i>TAX_PLAN_RATIO</i> = 0, and equal to 0 otherwise.
<b>Control Variables</b>	
<i>ACCT_EXP</i>	The percentage of audit committee members with accounting financial expertise (i.e., certified public accountant, chief financial officer, auditor, chief accounting officer, controller, treasurer or vice president-finance). [BoardEx]
<i>OTH_NAF_RATIO</i>	Non-audit fees other than tax (total fees - audit fees - tax non-audit fees) divided by total fees paid to the auditor. [Audit Analytics]
<i>AUD_FEE</i>	Log of audit fees. [Audit Analytics]
<i>AUD_CHG</i>	Indicator variable equal to 1 if the company switched auditors in the current or prior year, 0 otherwise. [Audit Analytics]
<i>BIG4</i>	Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. [Audit Analytics]
<i>SIZE</i>	Log of total assets [AT].
<i>ROA</i>	Return on assets calculated as pretax book income [PI] divided by prior year total assets [AT].
<i>FOR_D</i>	Indicator variable equal to 1 if firm reports foreign income [PIFO], 0 otherwise.
<i>NOL</i>	Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards [TLCF] in previous year, 0 otherwise.
<i>LEV</i>	Leverage calculated as long term debt [DLTT] plus debt in current liabilities [DLC] divided by log of prior year total assets [AT].
<i>BM</i>	Book to market ratio calculated as the book value of stockholders equity [SEQ] divided by the market value of stockholders equity [CSHO*PRCC_F].

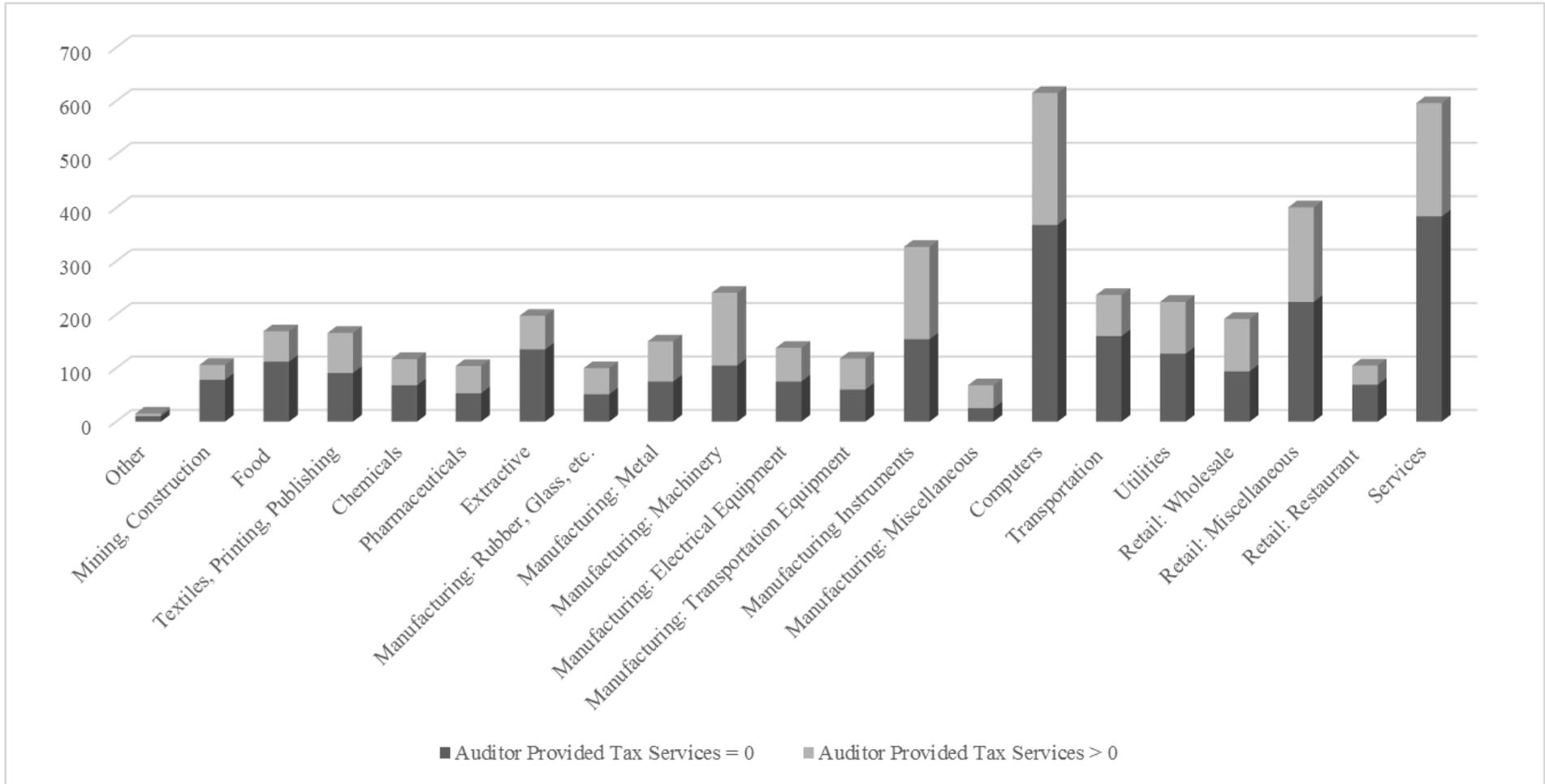
**Appendix B  
Variable Definitions**

Variable Name	Variable Definition [source]
<b>Control Variables (Cont)</b>	
<i>RD</i>	Research and development expense [XRD] scaled by prior year total assets [AT].
<i>CAPX</i>	Capital expenditures [CAPX] scaled by prior year total assets [AT].
<i>DSALES</i>	Change in total sales [SALE] from year t-1 to year t.
<i>VOL_OF_PTBI</i>	The standard deviation of the ratio of pretax book income [PI] to lagged total assets [AT] over the time period t to t+4.
<i>ESO_BENEFITS</i>	The excess tax benefit of stock options [TXBCOF] scaled by lagged total assets. Stock Option Tax Benefit is set to 0 if missing.
<i>IMR</i>	Inverse Mills ratio from the decision to purchase tax NAS using the model consistent with Lassila et al. (2010) and McGuire et al. (2012).
<b>Additional Variables for Decision to Purchase APTS and Disclose the Tax Fee Breakdown Models</b>	
<i>APTS_INDICATOR</i>	Indicator variable equal to 1 if the firm purchased tax services from their external auditor; 0 otherwise.
<i>ESO_INDUSTRY</i>	Indicator variable set equal to one if a firm operates in an industry with potentially large tax deductions from the exercise of options (defined as industry SIC codes 30–39 and 70–89); 0 otherwise.
<i>AUD_TENURE</i>	Length of the audit firm’s tenure with its client. [Audit Analytics]
<i>ACQUIRE</i>	Indicator variable equal to 1 if firm participated in any merger activity during year t or year t-1; 0 otherwise.
<i>OPPORTUNITY</i>	Market value of a client divided by the sum of the market value of all clients in the same industry at the same MSA city.
<i>TAXLOSS</i>	Tax net operating loss carryforward reported at the end of year t, scaled by total assets at the end of year t [TLCF/AT].
<i>DISC_EXTRA</i>	Indicator variable set equal to one when a firm reports a large discretionary/extraordinary item [defined as discontinued and extraordinary items from the statement of cash flows [XIDOC]][1 % of revenue [REVT]]; 0 otherwise
<i>DNOL</i>	Change in net operating loss carryforwards [TLCF] from year t-1 to year t.
<i>LTD</i>	Long Term Debt scaled by total assets [DLTT/AT].
<i>BTM</i>	Book-to-market ratio for the end of year t, measured as book value of equity divided by market value of equity [CEQ/PRCC_F*CSHO].
<i>TIER2</i>	Indicator variable equal to 1 if auditor is BDO Seidman, or Grant Thornton; 0 otherwise.
<i>PPE</i>	Net PPE for year t scaled by total assets [PPENT/AT].
<i>CASH</i>	Cash holding at the end of year t divided by total assets [CH/AT].
<i>DEP</i>	Depreciation expense for year t divided by total assets [DEP/AT].
<i>HHI</i>	Herfindahl-Hirschman index based on a firm’s sales across industries. [COMPUSTAT]
<i>SEGMENT</i>	Number of segments reported in COMPUSTAT segment file.
<i>CEO_DUAL</i>	Indicator variable equal to 1 if the CEO is also the chairman of the board, 0 otherwise. [BoardEx]

**Appendix B  
Variable Definitions**

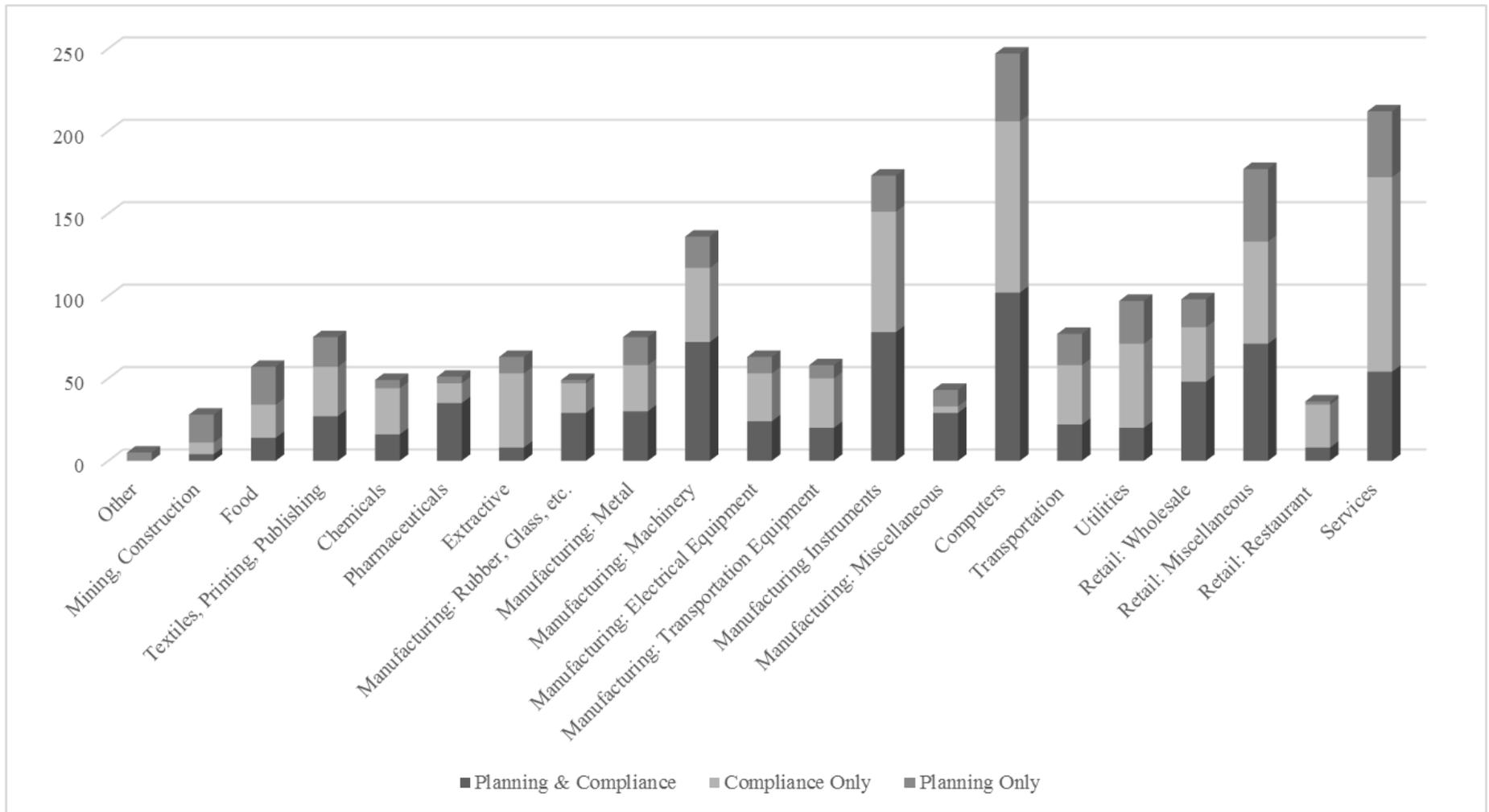
<b>Variable Name</b>	<b>Variable Definition [source]</b>
<b>Additional Variables for Decision to Purchase APTS and Disclose the Tax Fee Breakdown Models (cont)</b>	
<i>AC_SIZE</i>	The size of the audit committee [BoardEx]
<i>INSTOWN</i>	Institutional ownership data is taken from Thomson Reuters institutional holding (13f) database and is calculated as the percentage of common shares held by institutional investors on December 31 of the corresponding fiscal year [Thomson Financial]
<i>INSTOWN_DUMMY</i>	Indicator variable equal to 1 if missing observation in the Thomson Financial dataset, 0 otherwise.
<i>RESTATE</i>	Indicator variable equal to 1 if the company has restated its financial reports in the past year, 0 otherwise [Audit Analytics]
<i>AUDOFF_TAXDISC%</i>	The number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS.

**Figure 1**  
**Tax Non-Audit Services By Industry**



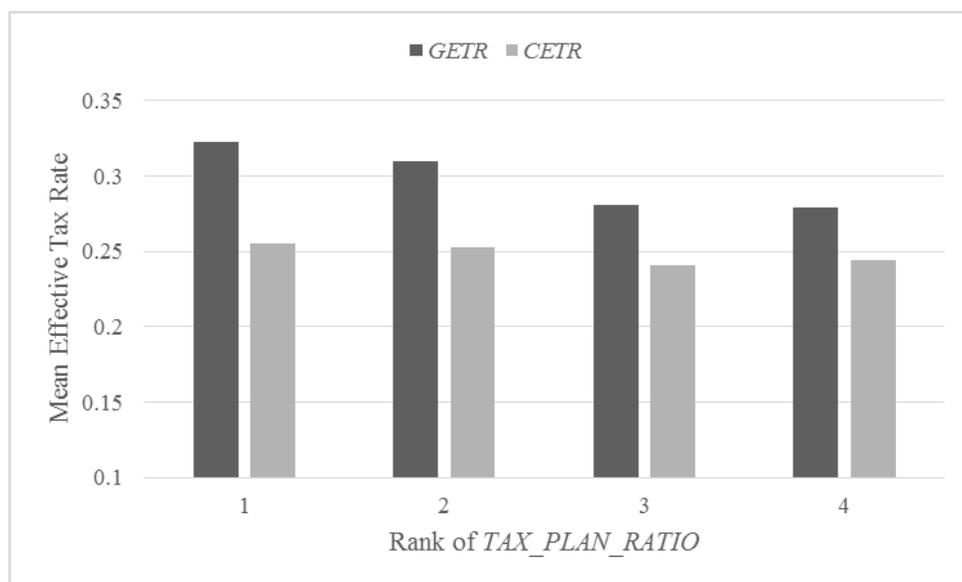
This figure is based on the firms-years within our primary samples that have non-missing data on the separation between tax planning and tax compliance. This includes firms that purchase auditor provided tax services and disclose the breakdown between planning and compliance (i.e. Group 2) and firms that do not purchase auditor provided tax services (i.e. Group 3). The y-axis captures the number of firm-years within each industry grouping. Industry groupings are based on the 22 industries from Barth, Beaver, and Landsman (1998) and Barth, Beaver, Hand, and Landsman (1999).

**Figure 2**  
**Tax Non-Audit Services Mix By Industry**

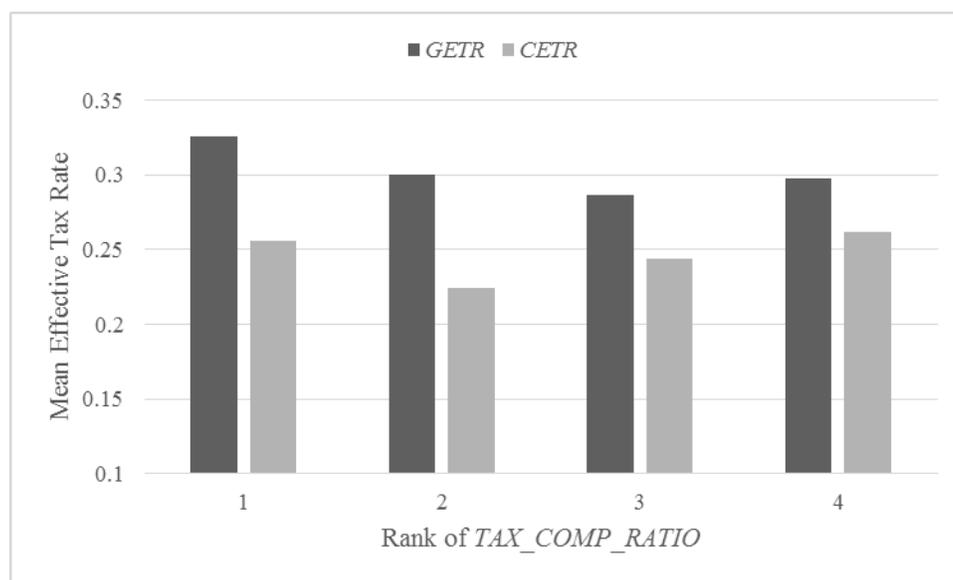


This figure is based on the firms-years within our primary samples that have non-missing data on the separation between tax planning and tax compliance and also purchased auditor provided tax services (i.e. Group 2). The y-axis captures the number of firm-years within each industry grouping. Industry groupings are based on the 22 industries from Barth, Beaver, and Landsman (1998) and Barth, Beaver, Hand, and Landsman (1999).

**Figure 3**  
**Univariate Analysis - Effective Tax Rates by Tax Non-Audit Services Ratio Rank**



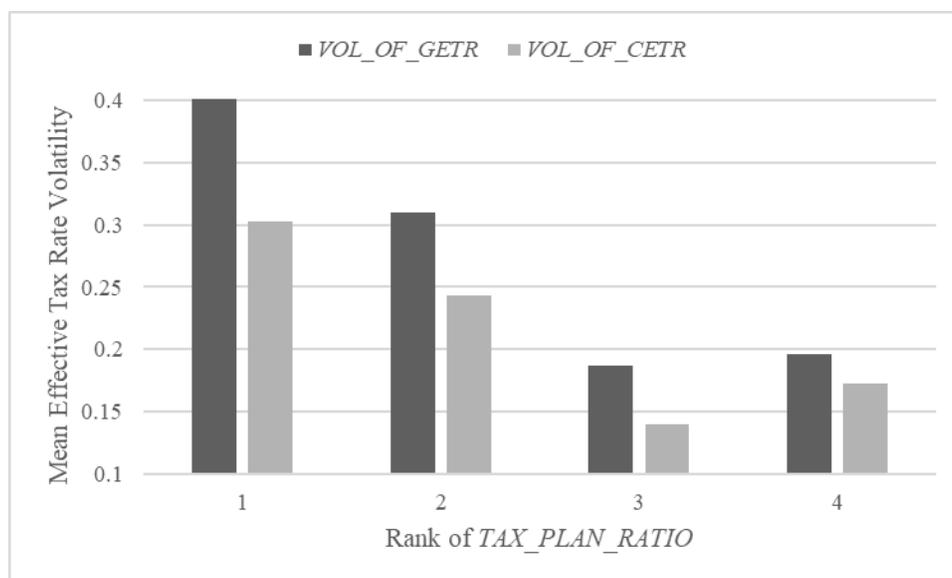
	Rank of <i>TAX_PLAN_RATIO</i>				Differences between Ranks	
	1 (lowest)	2	3	4 (highest)	4-1	4-2
<i>GETR</i>	0.323	0.310	0.281	0.279	-0.044***	-0.031***
<i>CETR</i>	0.255	0.253	0.241	0.244	-0.011	-0.009



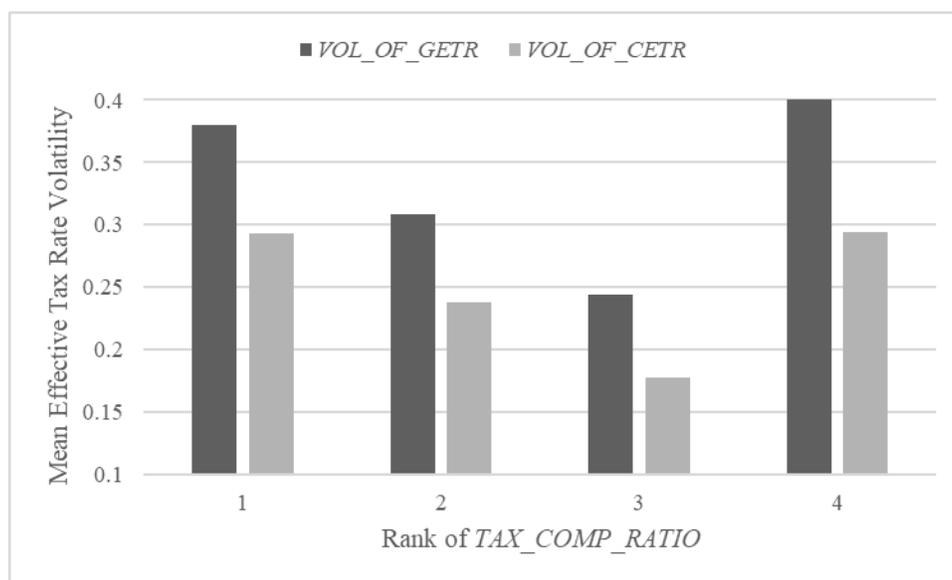
	Rank of <i>TAX_COMP_RATIO</i>				Differences between Ranks	
	1 (lowest)	2	3	4 (highest)	4-1	4-2
<i>GETR</i>	0.326	0.300	0.287	0.298	-0.028***	-0.002
<i>CETR</i>	0.256	0.239	0.246	0.261	0.005	0.022***

This figure and associated tables presents effective tax rate mean realizations by *TAX\_PLAN\_RATIO* and *TAX\_COMP\_RATIO* ranks – where ranks are formed annually. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. For the purposes of this analysis, Rank 1 captures all firm-years where either auditor provided tax planning or tax compliance fees are nonzero. Ranks 2 through 4 sort firm-years where either auditor provided tax planning or tax compliance fees are nonzero. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. See Appendix B for detailed variable definitions included data sources. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively for tests of differences between Ranks 4 and 1 (4-1) and Ranks 4 and 2 (4-2).

**Figure 4**  
**Univariate Analysis – Tax Risk by Tax Non-Audit Services Ratio Rank**



	Rank of <i>TAX_PLAN_RATIO</i>				Differences between Ranks	
	1 (lowest)	2	3	4 (highest)	4-1	4-2
<i>VOL_OF_GETR</i>	0.402	0.310	0.187	0.196	-0.206***	-0.114
<i>VOL_OF_CETR</i>	0.303	0.243	0.140	0.173	-0.130***	-0.070



	Rank of <i>TAX_COMP_RATIO</i>				Differences between Ranks	
	1 (lowest)	2	3	4 (highest)	4-1	4-2
<i>VOL_OF_GETR</i>	0.280	0.308	0.244	0.412	0.032	0.104
<i>VOL_OF_CETR</i>	0.293	0.238	0.178	0.294	-0.001	0.056

This figure and associated tables presents effective tax risk proxy realizations by *TAX\_PLAN\_RATIO* and *TAX\_COMP\_RATIO* ranks – where ranks are formed annually. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. For the purposes of this analysis, Rank 1 captures all firm-years where either auditor provided tax compliance fees are equal to 0. Ranks 2 through 4 sort firm-years where either auditor provided tax planning or tax compliance fees are nonzero. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. See Appendix B for detailed variable definitions included data sources. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively for tests of differences between Ranks 4 and 1 (4-1) and Ranks 4 and 2 (4-2).

**Table 1**  
**Sample Selection**

**Panel A – *GETR* and *CETR* Models**

Initial firm-year observations without missing Audit Analytics, Compustat and BoardEx variables	11,575		
Firm-years with negative pretax income	(2,240)		
Firms not incorporated in the US and “non-corporate” firms	(330)		
Financial firms	(883)		
Extended Sample	<u>8,122</u>		
	(1) APTS > 0 - No Tax Fee Disclosure	4,465	
	(2) APTS > 0 – Tax Fee Disclosure		1,720
	(3) APTS = 0		<u>1,937</u>
Primary Sample			<u><b>3,657</b></u>

**Panel B – *VOL\_OF\_GETR* and *VOL\_OF\_CETR* Model**

Initial firm-year observations without missing Audit Analytics, Compustat and BoardEx variables	12,418		
Firm-years with negative pretax income	(3,037)		
Firms not incorporated in the US and “non-corporate” firms	(324)		
Financial firms	(761)		
Firms missing sequential years of PTBI, ETR and CETR data	(1,787)		
Extended Sample	<u>6,509</u>		
	(1) APTS > 0 - No Tax Fee Disclosure	3,949	
	(2) APTS > 0 – Tax Fee Disclosure		1,046
	(3) APTS = 0		<u>1,514</u>
Primary Sample			<u><b>2,560</b></u>

**Table 2 – Panel A**  
**Decision to Purchase APTS**

<i>DV=APTS_INDICATOR</i>	Hypothesized Directional Expectation	
<i>OTH_NAF_RATIO</i>	+	0.071 (0.33)
<i>AUD_FEE</i>	+	0.124*** (2.83)
<i>ESO_INDUSTRY</i>	?	-0.838** (-2.49)
<i>AUD_TENURE</i>	+	0.017*** (5.08)
<i>ACQUIRE</i>	+	0.081 (1.41)
<i>OPPORTUNITY</i>	+	0.414*** (2.74)
<i>TAXLOSS</i>	?	-0.061 (-1.16)
<i>DISC_EXTRA</i>	?	-0.026 (-0.23)
<i>SIZE</i>	+	0.055* (1.86)
<i>NOL</i>	+	0.031 (0.63)
<i>DNOL</i>	+	-0.041 (-0.85)
<i>FOR_D</i>	+	0.193*** (3.17)
<i>RD</i>	+	-0.022 (-0.03)
<i>LTD</i>	+	-0.129 (-0.85)
<i>BTM</i>	+	-0.051 (-1.30)
<i>BIG4</i>	+	0.193** (1.98)
<i>TIER2</i>	-	-0.238** (-2.35)
<i>ROA</i>	+	0.140 (1.15)
<i>PPE</i>	+	0.010 (0.05)
<i>CASH</i>	+	0.002 (0.01)
<i>DEP</i>	+	0.356 (0.37)
Constant		-1.405*** (-4.56)
Observations		11733
Industry and Year Fixed Effects		Yes
Pseudo R <sup>2</sup>		0.126
Area Under ROC		0.7444

**Table 2 – Panel A**  
**Decision to Purchase APTS, continued**

Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively. Variables are defined as follows: *APTS\_INDICATOR* = Indicator variable equal to 1 if the firm purchased tax services from their external auditor; 0 otherwise. *OTH\_NAF\_RATIO* = Non-audit fees other than tax (total fees - audit fees - tax non-audit fees) divided by total fees paid to the auditor. *AUD\_FEE* = Log of audit fees. *ESO\_INDUSTRY* = Indicator variable set equal to one if a firm operates in an industry with potentially large tax deductions from the exercise of options (defined as industry SIC codes 30–39 and 70–89) and set equal to zero otherwise. *AUD\_TENURE* = Length of the audit firm’s tenure with its client. *ACQUIRE* = Indicator variable equal to 1 if firm participated in any merger activity during year t or year t-1; 0 otherwise. *OPPORTUNITY* = Market value of a client divided by the sum of the market value of all clients in the same industry at the same MSA city. *TAXLOSS* = tax net operating loss carryforward reported at the end of year t, scaled by total assets at the end of year t. *DISC\_EXTRA* = Indicator variable set equal to one when a firm reports a large discretionary/extraordinary item defined as discontinued and extraordinary items from the statement of cash flows (1 % of revenue); 0 otherwise. *SIZE* = Log of total assets. *NOL* = Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards in previous year, 0 otherwise. *DNOL* = Change in net operating loss carryforwards from year t-1 to year t. *FOR\_D* = Indicator variable equal to 1 if firm reports foreign income, 0 otherwise. *RD* = Research and development expense scaled by prior year total assets. *LTD* = Long Term Debt scaled by total assets. *BTM* = Book-to-market ratio for the end of year t, measured as book value of equity divided by market value of equity. *BIG4* = Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. *TIER2* = Indicator variable equal to 1 if auditor is BDO Seidman, or Grant Thornton, 0 otherwise. *ROA* = Return on assets calculated as pretax book income divided by prior year total assets. *PPE* = Net PPE for year t scaled by total assets at the beginning of the year. *CASH* = Cash holding at the end of year t divided by total assets at the beginning of the year. *DEP* = Depreciation and amortization expense for year t divided by total assets at the beginning of the year. See Appendix B for detailed variable definitions included data sources.

**Table 2 – Panel B**  
**Decision to Disclose the Tax Fee Breakdown**

<i>DV=TAX_FEE_DISCLOSE</i>	Hypothesized Directional Expectation	
<i>OTH_NAF_RATIO</i>	+	0.120 (0.45)
<i>AUD_FEE</i>	+	0.027 (0.43)
<i>AUD_TENURE</i>	+	0.003 (0.79)
<i>ACQUIRE</i>	?	-0.167*** (-2.70)
<i>BIG4</i>	+	-0.093 (-0.86)
<i>HHI</i>	-	-0.022 (-0.13)
<i>SIZE</i>	+	0.087** (2.16)
<i>LEV</i>	+	-0.028 (-0.16)
<i>ROA</i>	+	0.237 (0.52)
<i>BTM</i>	-	-0.098 (-0.86)
<i>FOR_D</i>	?	-0.110^ (-1.39)
<i>NOL</i>	?	0.057 (0.96)
<i>RD</i>	?	1.869* (1.84)
<i>CAPX</i>	?	-0.447 (-0.65)
<i>SEGMENT</i>	?	0.018 (1.04)
<i>CEO_DUAL</i>	-	-0.055 (-0.88)
<i>ACCT_EXP</i>	+	0.125 (1.04)
<i>AC_SIZE</i>	?	-0.001 (-0.02)
<i>INSTOWN</i>	+	0.090 (0.62)
<i>INSTOWN_DUMMY</i>	?	0.014 (0.09)
<i>GETR</i>	-	-0.213 (-0.97)
<i>TAX_FEE_RATIO</i>	+	0.927*** (3.51)
<i>RESTATE</i>	+	0.011 (0.25)
<i>DSALES</i>	+	0.000 (0.67)
<i>AUDOFF_TAXDISC%</i>	+	3.446*** (21.31)
Constant		-2.742*** (-3.84)
Observations		8241
Industry and Year Fixed Effects		Yes
Pseudo R <sup>2</sup>		0.168
Area Under ROC		0.7640

**Table 2 – Panel B**  
**Decision to Disclose the Tax Fee Breakdown, continued**

Table 2 – Panel B reports coefficients and, in parentheses, t-statistics based on robust standard errors clustered at the firm level for logistic regression models predicting the likelihood that a firm will disclose the tax planning and compliance components of total tax fees paid to the external auditor in a given year. The sample consists of firms who purchase APTS. Variables are defined as follows: *OTH\_NAF\_RATIO* = Non-audit fees other than tax (total fees – audit fees - tax non-audit fees) divided by total fees paid to the auditor. *AUD\_FEE* = Log of audit fees. *AUD\_TENURE* = Length of the audit firm’s tenure with its client. *ACQUIRE* = Indicator variable equal to 1 if firm participated in any merger activity during year t or year t-1; 0 otherwise. *BIG4* = Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. *HHI* = Herfindahl-Hirschman index based on a firm’s sales across industries. *SIZE* = Log of total assets. *LEV* = Leverage calculated as long term debt plus debt in current liabilities divided by log of prior year total assets. *ROA* = Return on assets calculated as pretax book income divided by prior year total assets. *BTM* = Book-to-market ratio for the end of year t, measured as book value of equity divided by market value of equity. *FOR\_D* = Indicator variable equal to 1 if firm reports foreign income, 0 otherwise. *NOL* = Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards in previous year, 0 otherwise. *RD* = Research and development expense scaled by prior year total assets. *CAPX* = Capital expenditures scaled by prior year total assets. *SEGMENT* = Natural log of the sum of the number of operating and geographic segments. *CEO\_DUAL* = A binary variable equal to 1 if the CEO is also the chairman on the board, 0 otherwise. *ACCT\_EXP* = A binary variable equal to 1 if an AC member is an accounting financial, 0 otherwise. *AC\_SIZE* = The number of the audit committee members. *INSTOWN* = the percentage of common shares held by institutional investors on December 31 of the corresponding fiscal year. *INSTOWN\_DUMMY* = Indicator variable equal to 1 if missing observation in the Thomson Financial dataset, 0 otherwise. *GETR* = The effective tax rate calculated as the total tax expense divided by pre-tax book income less special items. *TAX\_FEE\_RATIO* = Auditor provided tax services fees divided by total fees paid to the auditor. *RESTATE* = Indicator variable equal to 1 if the company has restated its financial reports in the past year, 0 otherwise. *DSALES* = Change in total sales from year t-1 to year t. *AUDOFF\_TAXDISC%* = The number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS. See Appendix B for detailed variable definitions included data sources. Numbers in parentheses are test statistics. ^, \*, \*\*, and \*\*\* denote two-tailed statistical significance at 20%, 10%, 5%, and 1% respectively.

**Table 3**  
**Descriptive Statistics**  
**Panel A - Basic Descriptive Statistics**

	GETR and CETR Sample			VOL_OF_GETR and VOL_OF_CETR Sample		
	Mean	Median	Std Dev	Mean	Median	Std Dev
<i>TAX_FEE_RATIO</i>	0.061	0.000	0.100	0.055	0.000	0.101
<i>TAX_PLAN_RATIO</i>	0.024	0.000	0.059	0.023	0.000	0.059
<i>TAX_COMP_RATIO</i>	0.037	0.000	0.071	0.032	0.000	0.065
<i>GETR</i>	0.314	0.332	0.108	0.308	0.330	0.109
<i>CETR</i>	0.253	0.251	0.166	0.241	0.241	0.165
<i>VOL_OF_GETR</i>	-	-	-	0.274	0.095	0.648
<i>VOL_OF_CETR</i>	-	-	-	0.361	0.058	1.169
<i>ACCT_EXP</i>	0.401	0.333	0.247	0.411	0.333	0.248
<i>AUD_CHG</i>	0.101	0.000	0.302	0.091	0.000	0.288
<i>OTH_NAF_RATIO</i>	0.059	0.029	0.084	0.056	0.024	0.084
<i>AUD_FEE</i>	13.976	13.927	1.183	13.928	13.901	1.174
<i>BIG4</i>	0.773	1.000	0.419	0.762	1.000	0.426
<i>SIZE</i>	6.881	6.765	1.881	6.758	6.678	1.813
<i>ROA</i>	0.115	0.096	0.082	0.115	0.097	0.080
<i>FOR_D</i>	0.521	1.000	0.500	0.513	1.000	0.500
<i>NOL</i>	0.422	0.000	0.494	0.425	0.000	0.494
<i>LEV</i>	0.467	0.456	0.217	0.464	0.459	0.214
<i>DSALES</i> <sup>†</sup>	289.300	43.444	1154.650	262.235	46.397	986.998
<i>RD</i>	0.023	0.000	0.040	0.023	0.000	0.042
<i>CAPX</i>	0.054	0.036	0.055	0.053	0.036	0.054
<i>ACQUIRE</i>	0.181	0.000	0.385	0.214	0.000	0.411
<i>AUDOFF_TAXDISC%</i>	0.313	0.281	0.222	0.315	0.286	0.228
<i>BM</i>	0.531	0.460	0.353	-	-	-
<i>VOL_OF_PTBI</i>	-	-	-	0.055	0.035	0.062
<i>ESO_BENEFITS</i>	-	-	-	0.003	0.000	0.007
<i>Observations</i>	3,657			2,560		

This table presents basic descriptive statistics for the control variables used in regression testing. *TAX\_FEE\_RATIO* = Fees paid for auditor provided tax services divided by total fees paid to the auditor; *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *TAX\_PLAN\_RATIO\_WCOMP* = Auditor provided tax planning services fees divided by total fees paid to the auditor when *TAX\_COMP\_RATIO* > 0, and equal to 0 otherwise. *TAX\_PLAN\_RATIO\_WOCOMP* = Auditor provided tax planning services fees divided by total fees paid to the auditor when *TAX\_COMP\_RATIO* = 0, and equal to 0 otherwise. *TAX\_COMP\_RATIO\_WPLAN* = Auditor provided tax compliance services fees divided by total fees paid to the auditor when *TAX\_PLAN\_RATIO* > 0, and equal to 0 otherwise. *TAX\_COMP\_RATIO\_WOPLAN* = Auditor provided tax compliance services fees divided by total fees paid to the auditor when *TAX\_PLAN\_RATIO* = 0, and equal to 0 otherwise. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *ACCT\_EXP* = Percentage of audit committee members with accounting financial expertise (i.e., certified public accountant, chief financial officer, auditor, chief accounting officer, controller, treasurer or vice president-finance). *AUD\_CHG* = Indicator variable equal to 1 if the company switched auditors in the current or prior year, 0 otherwise. *OTH\_FEE\_RATIO* = Non-audit fees other than tax (total fees - audit fees - tax non-audit fees) divided by total fees paid to the auditor. *AUD\_FEE* = Log of audit fees. *BIG4* = Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. *SIZE* = Log of total assets. *ROA* = Return on assets calculated as pretax book income divided by prior year total assets. *FOR\_D* = Indicator variable equal to 1 if firm reports foreign income, 0 otherwise. *NOL* = Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards in previous year, 0 otherwise. *LEV* = Leverage calculated as long term debt plus debt in current liabilities divided by log of prior year total assets. *BM* = Book to market ratio calculated as the book value of stockholders equity divided by the market value of stockholders equity. *DSALES* = Change in total sales from year t-1 to year t (†results remain unchanged when it is scaled by total assets). *RD* = Research and development expense scaled by prior year total assets. *CAPX* = Capital expenditures scaled by prior year total assets. *ACQUIRE* = Indicator variable equal to 1 if the company acquired another firm in the current or previous year, 0 otherwise. *AUDOFF\_TAXDISC%* = The number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS. *VOL\_OF\_PTBI* = standard deviation of the ratio of pretax book income divided by lagged total assets over the time period t to t+4. *ESO\_BENEFITS* = excess tax benefit of stock options scaled by lagged total assets. Stock Option Tax Benefit is set to 0 if missing. See Appendix B for detailed variable definitions included data sources.

**Table 3**  
**Descriptive Statistics, continued**  
**Panel B – Tax Fee Ratio Rank Analysis**

***TAX\_PLAN\_RATIO* Ranks**

<i>GETR/CETR</i> Sample					
Rank	N	Fee Ratio		Raw Fees	
		Mean	Median	Mean	Median
1	2671	0.000	0.000	-	-
2	326	0.015	0.013	72,331	29,393
3	331	0.065	0.062	346,184	162,285
4	329	0.185	0.163	965,487	504,300
Full Sample	3657	0.023	0.000	124,641	-

***VOL\_OF\_CETR/VOL\_OF\_ETR* Sample**

Rank	N	Fee Ratio		Raw Fees	
		Mean	Median	Mean	Median
1	1944	0.000	0.000	-	-
2	203	0.016	0.015	78,203	34,297
3	208	0.070	0.067	389,239	220,000
4	205	0.197	0.178	872,214	500,000
Full Sample	2560	0.023	0.000	107,672	-

***TAX\_COMP\_RATIO* Ranks**

<i>GETR/CETR</i> Sample					
Rank	N	Fee Ratio		Raw Fees	
		Mean	Median	Mean	Median
1	2262	0.000	0.000	-	-
2	463	0.021	0.021	112,508	36,522
3	468	0.074	0.073	427,463	213,584
4	464	0.196	0.180	969,252	449,223
Full Sample	3657	0.036	0.000	191,927	-

***VOL\_OF\_CETR/VOL\_OF\_ETR* Sample**

Rank	N	Fee Ratio		Raw Fees	
		Mean	Median	Mean	Median
1	1724	0.000	0.000	-	-
2	277	0.021	0.020	128,036	44,000
3	281	0.077	0.076	392,251	220,300
4	278	0.202	0.184	894,983	485,500
Full Sample	2560	0.033	0.000	154,099	-

The table presents tax planning and tax compliance ratio mean and median realizations by tax ratio rank for each sample. The table also presents the mean and median raw fee value within each rank. For the purposes of this analysis, Rank 1 captures all firm-years where either auditor provided tax planning or tax compliance fees are equal to 0. Ranks 2 through 4 sort firm-years where either auditor provided tax planning or tax compliance fees are nonzero. *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. See Appendix B for detailed variable definitions included data sources.

**Table 4**  
**Univariate Analysis - Correlations in Variables of Interest**

	<b>TAX_FEE_RATIO</b>	<b>TAX_PLAN_RATIO</b>	<b>TAX_COMP_RATIO</b>	<b>GETR</b>	<b>CETR</b>	<b>VOL_OF_GETR</b>	<b>VOL_OF_CETR</b>
	1.0000						
<b>TAX_PLAN_RATIO</b>	0.7442 <i>&lt;0.001</i>	1.0000					
<b>TAX_COMP_RATIO</b>	0.8121 <i>&lt;0.001</i>	0.2230 <i>&lt;0.001</i>	1.0000				
<b>GETR</b>	-0.1294 <i>&lt;0.001</i>	-0.1245 <i>&lt;0.001</i>	-0.0745 <i>&lt;0.001</i>	1.0000			
<b>CETR</b>	-0.0163 <i>0.326</i>	-0.0312 <i>0.056</i>	0.0047 <i>0.777</i>	0.2860 <i>&lt;0.001</i>	1.0000		
<b>VOL_OF_GETR</b>	-0.0440 <i>0.026</i>	-0.0600 <i>0.002</i>	-0.0110 <i>0.581</i>	0.0058 <i>0.797</i>	0.0731 <i>0.001</i>	1.0000	
<b>VOL_OF_CETR</b>	-0.0451 <i>0.023</i>	-0.0658 <i>&lt;0.001</i>	-0.0085 <i>0.667</i>	0.0776 <i>&lt;0.001</i>	0.1535 <i>&lt;0.001</i>	0.5653 <i>&lt;0.001</i>	1.0000

The table presents Pearson Correlation Coefficients above, along with associated p-values in italics below, for the variables of interest in our regressions. *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. See Appendix B for detailed variable definitions included data sources.

**Table 5**  
**Tests of H1<sub>a</sub> and H1<sub>b</sub>**

Dependent Variable	<i>GETR</i>			<i>CETR</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>TAX_FEE_RATIO</i>	-0.028** (-2.02)	-0.059*** (-2.70)		0.010 (0.47)	-0.029 (-0.91)	
<i>TAX_PLAN_RATIO</i>			-0.103*** (-2.97)			-0.089* (-1.86)
<i>TAX_COMP_RATIO</i>			-0.019 (-0.68)			0.014 (0.31)
<i>ACCT_EXP</i>	-0.010* (-1.66)	-0.005 (-0.56)	-0.005 (-0.59)	-0.018* (-1.87)	-0.030** (-2.20)	-0.030** (-2.24)
<i>AUD_CHG</i>	0.005 (0.92)	0.013* (1.93)	0.013* (1.90)	0.012 (1.54)	0.009 (0.82)	0.009 (0.80)
<i>OTH_NAF_RATIO</i>	-0.012 (-0.73)	-0.020 (-0.86)	-0.020 (-0.87)	-0.001 (-0.04)	-0.013 (-0.33)	-0.014 (-0.35)
<i>AUD_FEE</i>	-0.010*** (-3.13)	-0.009** (-2.08)	-0.009** (-2.06)	0.010** (2.04)	0.002 (0.39)	0.002 (0.39)
<i>SIZE</i>	-0.004* (-1.92)	-0.004 (-1.39)	-0.004 (-1.38)	-0.017*** (-5.08)	-0.017*** (-3.83)	-0.017*** (-3.81)
<i>ROA</i>	0.223*** (9.22)	0.154*** (4.77)	0.153*** (4.75)	0.136*** (3.60)	0.122** (2.56)	0.121** (2.54)
<i>FOR_D</i>	-0.019*** (-4.44)	-0.018*** (-2.96)	-0.017*** (-2.86)	0.004 (0.66)	0.010 (1.03)	0.011 (1.11)
<i>NOL</i>	-0.005* (-1.65)	-0.009* (-1.86)	-0.009* (-1.86)	-0.030*** (-6.17)	-0.032*** (-4.56)	-0.032*** (-4.56)
<i>LEV</i>	0.017* (1.77)	0.018 (1.30)	0.018 (1.26)	-0.044*** (-3.15)	-0.059*** (-3.09)	-0.060*** (-3.13)
<i>BM</i>	0.012** (2.00)	0.004 (0.50)	0.004 (0.47)	0.018* (1.91)	0.010 (0.80)	0.010 (0.77)
<i>DSALES</i>	0.000 (0.42)	0.000 (0.68)	0.000 (0.61)	-0.000^ (-1.29)	0.000 (0.80)	0.000 (0.75)
<i>RD</i>	-0.282*** (-4.84)	-0.289*** (-3.21)	-0.294*** (-3.26)	-0.449*** (-5.80)	-0.451*** (-4.02)	-0.456*** (-4.06)
<i>CAPX</i>	-0.016 (-0.45)	-0.018 (-0.32)	-0.017 (-0.30)	-0.285*** (-4.88)	-0.327*** (-3.59)	-0.325*** (-3.57)
<i>BIG4</i>	0.024*** (3.71)	0.027*** (3.09)	0.028*** (3.17)	0.002 (0.24)	0.002 (0.16)	0.003 (0.23)
<i>IMR</i>	0.006 (0.37)	0.013 (0.60)	0.015 (0.68)	-0.079*** (-3.01)	-0.102*** (-2.77)	-0.101*** (-2.71)
<i>ACQUIRE</i>	-0.005 (-1.57)	-0.001 (-0.15)	-0.000 (-0.07)	-0.006 (-1.15)	-0.004 (-0.54)	-0.004 (-0.48)
<i>AUDOFF_TAXDISC%</i>	-0.001 (-0.16)	-0.003 (-0.34)	-0.004 (-0.52)	-0.002 (-0.17)	0.006 (0.38)	0.004 (0.28)
Constant	0.407*** (7.51)	0.412*** (7.93)	0.410*** (7.90)	0.268*** (2.61)	0.380*** (4.94)	0.379*** (4.93)
Observations	8122	3657	3657	8122	3657	3657
Industry and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.175	0.170	0.170	0.106	0.112	0.112

**Table 5**  
**Tests of H1<sub>a</sub> and H1<sub>b</sub>, continued**

Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively. Variables are defined as follows: *TAX\_FEE\_RATIO* = Fees paid for auditor provided tax services divided by total fees paid to the auditor; *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *ACCT\_EXP* = Percentage of audit committee members with accounting financial expertise (i.e., certified public accountant, chief financial officer, auditor, chief accounting officer, controller, treasurer or vice president-finance). *AUD\_CHG* = Indicator variable equal to 1 if the company switched auditors in the current or prior year, 0 otherwise. *OTH\_FEE\_RATIO* = Non-audit fees other than tax (total fees - audit fees - tax non-audit fees) divided by total fees paid to the auditor. *AUD\_FEE* = Log of audit fees. *BIG4* = Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. *SIZE* = Log of total assets. *ROA* = Return on assets calculated as pretax book income divided by prior year total assets. *FOR\_D* = Indicator variable equal to 1 if firm reports foreign income, 0 otherwise. *NOL* = Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards in previous year, 0 otherwise. *LEV* = Leverage calculated as long term debt plus debt in current liabilities divided by log of prior year total assets. *BM* = Book to market ratio calculated as the book value of stockholders equity divided by the market value of stockholders equity. *DSALES* = Change in total sales from year t-1 to year t (\*results remain unchanged when it is scaled by total assets). *RD* = Research and development expense scaled by prior year total assets. *CAPX* = Capital expenditures scaled by prior year total assets. *IMR* is the inverse Mills ratio from a first stage decision to purchase tax NAS model (see Table 2). *ACQUIRE* = Indicator variable equal to 1 if the company acquired another firm in the current or previous year, 0 otherwise. *AUDOFF\_TAXDISC%* = The number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS. See Appendix B for detailed variable definitions included data sources.

**Table 6**  
**Tests of H2<sub>a</sub> and H2<sub>b</sub>**

Dependent Variable	<i>VOL_OF_GETR</i>			<i>VOL_OF_CETR</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>TAX_FEE_RATIO</i>	0.033 (0.20)	-0.068 (-0.23)		-0.021 (-0.23)	-0.022 (-0.12)	
<i>TAX_PLAN_RATIO</i>			-0.764** (-2.25)			-0.491** (-2.36)
<i>TAX_COMP_RATIO</i>			0.568 (1.01)			0.386 (1.09)
<i>GETR</i>	-0.057 (-0.33)	-0.113 (-0.45)	-0.125 (-0.50)			
<i>CETR</i>				0.392*** (6.07)	0.364*** (3.13)	0.361*** (3.11)
<i>ACCT_EXP</i>	0.031 (0.52)	0.069 (0.72)	0.065 (0.68)	0.015 (0.40)	0.086 (1.19)	0.083 (1.17)
<i>OTH_NAF_RATIO</i>	0.074 (0.38)	0.020 (0.08)	0.007 (0.03)	0.120 (1.08)	0.221 (1.08)	0.211 (1.04)
<i>AUD_FEE</i>	0.100*** (2.94)	0.053 (1.10)	0.053 (1.09)	0.049** (2.52)	0.034 (1.09)	0.034 (1.09)
<i>AUD_CHG</i>	-0.015 (-0.26)	0.068 (0.72)	0.065 (0.69)	-0.039 (-1.32)	0.016 (0.31)	0.015 (0.27)
<i>BIG4</i>	0.019 (0.24)	0.054 (0.45)	0.060 (0.50)	-0.021 (-0.40)	-0.061 (-0.79)	-0.056 (-0.73)
<i>SIZE</i>	-0.148*** (-5.31)	-0.131*** (-3.17)	-0.131*** (-3.17)	-0.087*** (-5.34)	-0.084*** (-3.42)	-0.084*** (-3.43)
<i>ROA</i>	-2.362*** (-9.15)	-2.040*** (-5.61)	-2.028*** (-5.60)	-1.314*** (-9.67)	-1.315*** (-5.85)	-1.306*** (-5.82)
<i>FOR_D</i>	-0.010 (-0.16)	0.076 (0.79)	0.087 (0.89)	0.031 (0.98)	0.112** (2.15)	0.119** (2.26)
<i>NOL</i>	-0.033 (-0.84)	0.026 (0.38)	0.024 (0.36)	-0.025 (-1.18)	-0.034 (-0.89)	-0.035 (-0.91)
<i>LEV</i>	0.106 (1.05)	0.335* (1.88)	0.322* (1.83)	-0.057 (-1.08)	0.001 (0.01)	-0.008 (-0.09)
<i>DSALES</i>	0.000* (1.77)	0.000 (1.08)	0.000 (1.08)	0.000* (1.84)	0.000 (1.05)	0.000 (1.04)
<i>RD</i>	-0.795 (-1.31)	-1.768 (-1.60)	-1.852* (-1.68)	-0.305 (-1.14)	-0.901** (-2.14)	-0.952** (-2.21)
<i>CAPX</i>	0.072 (0.17)	-0.902* (-1.69)	-0.849 (-1.61)	0.417 (1.61)	0.029 (0.07)	0.060 (0.15)
<i>VOL_OF_PTBI</i>	4.370*** (9.03)	4.017*** (6.33)	4.054*** (6.35)	1.677*** (7.84)	1.668*** (4.80)	1.691*** (4.85)
<i>ESO_BENEFITS</i>	-0.050 (-0.01)	-0.954 (-0.16)	-0.872 (-0.15)	1.760 (0.91)	1.782 (0.57)	1.820 (0.58)
<i>IMR</i>	-0.316 (-1.35)	-0.193 (-0.60)	-0.189 (-0.59)	-0.151 (-1.04)	-0.173 (-0.88)	-0.171 (-0.87)
<i>ACQUIRE</i>	-0.007 (-0.19)	-0.025 (-0.42)	-0.019 (-0.32)	0.015 (0.71)	-0.017 (-0.41)	-0.013 (-0.31)
<i>AUDOFF_TAXDISC%</i>	-0.090 (-1.14)	0.112 (1.07)	0.099 (0.93)	-0.030 (-0.66)	-0.035 (-0.51)	-0.043 (-0.62)
Constant	-0.116 (-0.24)	0.111 (0.18)	0.106 (0.17)	0.094 (0.35)	0.188 (0.44)	0.184 (0.44)
Observations	6509	2560	2560	6509	2560	2560
Industry and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.091	0.082	0.084	0.095	0.086	0.088

## Table 6 Tests of H2, continued

Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively. Variables are defined as follows: *TAX\_FEE\_RATIO* = Fees paid for auditor provided tax services divided by total fees paid to the auditor; *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. *ACCT\_EXP* = Percentage of audit committee members with accounting financial expertise (i.e., certified public accountant, chief financial officer, auditor, chief accounting officer, controller, treasurer or vice president-finance). *AUD\_CHG* = Indicator variable equal to 1 if the company switched auditors in the current or prior year, 0 otherwise. *OTH\_FEE\_RATIO* = Non-audit fees other than tax (total fees - audit fees - tax non-audit fees) divided by total fees paid to the auditor. *AUD\_FEE* = Log of audit fees. *BIG4* = Indicator variable equal to 1 if auditor is Ernst & Young, Deloitte & Touche, PricewaterhouseCoopers or KPMG, 0 otherwise. *SIZE* = Log of total assets. *ROA* = Return on assets calculated as pretax book income divided by prior year total assets. *FOR\_D* = Indicator variable equal to 1 if firm reports foreign income, 0 otherwise. *NOL* = Indicator variable equal to 1 for firms with positive unused net operating loss carryforwards in previous year, 0 otherwise. *LEV* = Leverage calculated as long term debt plus debt in current liabilities divided by log of prior year total assets. *BM* = Book to market ratio calculated as the book value of stockholders equity divided by the market value of stockholders equity. *DSALES* = Change in total sales from year t-1 to year t (\*results remain unchanged when it is scaled by total assets). *RD* = Research and development expense scaled by prior year total assets. *CAPX* = Capital expenditures scaled by prior year total assets. *VOL\_OF\_PTBI* = standard deviation of the ratio of pretax book income divided by lagged total assets over the time period t to t+4. *ESO\_BENEFITS* = excess tax benefit of stock options scaled by lagged total assets. Stock Option Tax Benefit is set to 0 if missing. *IMR* is the inverse Mills ratio from a first stage decision to purchase tax NAS model (see Table 2). *ACQUIRE* = Indicator variable equal to 1 if the company acquired another firm in the current or previous year, 0 otherwise. *AUDOFF\_TAXDISC%* = The number of audit office clients purchasing tax NAS and disclosing the breakdown of tax planning and compliance NAS fees divided by the number of audit office clients purchasing tax NAS. See Appendix B for detailed variable definitions included data sources.

**Table 7**  
**Additional Analysis: Simultaneous Reduction in Effective Tax Rates and Tax Risk**

		TAX_PLAN_RATIO							
		VOL_OF_GETR Rank				VOL_OF_CETR Rank			
		1	2	3	4	1	2	3	4
GETR Rank	1	0.029	<b>0.054</b>	<b>0.037</b>	0.020	<b>0.041</b>	<b>0.045</b>	0.033	0.022
	2	0.026	<b>0.039</b>	0.030	0.010	0.024	<b>0.036</b>	0.032	0.019
	3	0.011	0.031	0.020	0.004	0.025	0.015	0.020	0.011
	4	0.019	0.013	0.021	0.008	0.021	0.020	0.015	0.011

		Raw Tax Planning Fees							
		VOL_OF_GETR Rank				VOL_OF_CETR Rank			
		1	2	3	4	1	2	3	4
GETR Rank	1	<b>268,064</b>	<b>451,587</b>	<b>202,151</b>	66,128	<b>344,685</b>	<b>348,991</b>	130,562	77,717
	2	145,740	182,322	171,859	41,782	173,639	<b>207,092</b>	122,830	52,393
	3	29,034	92,578	67,149	11,316	73,351	53,847	58,936	19,432
	4	49,837	24,897	50,783	15,914	25,090	38,235	51,197	29,938

		TAX_PLAN_RATIO							
		VOL_OF_GETR Rank				VOL_OF_CETR Rank			
		1	2	3	4	1	2	3	4
CETR Rank	1	0.014	0.027	0.017	0.014	0.018	0.016	0.019	0.020
	2	0.018	<b>0.049</b>	<b>0.043</b>	0.019	<b>0.046</b>	<b>0.040</b>	0.031	0.017
	3	0.024	<b>0.038</b>	0.027	0.014	0.026	<b>0.034</b>	0.028	0.015
	4	0.017	0.023	0.025	0.005	0.024	0.022	0.019	0.012

		Raw Tax Planning Fees							
		VOL_OF_GETR Rank				VOL_OF_CETR Rank			
		1	2	3	4	1	2	3	4
CETR Rank	1	79,168	<b>234,252</b>	82,671	33,092	142,788	155,355	84,214	70,858
	2	141,635	<b>282,372</b>	<b>247,988</b>	59,984	<b>357,699</b>	<b>241,229</b>	11,876	41,294
	3	112,080	176,892	97,106	62,722	129,062	<b>176,913</b>	72,561	52,685
	4	45,141	65,339	72,848	14,333	32,834	64,716	77,080	24,068

This table presents mean *TAX\_PLAN\_RATIO* and mean raw tax planning NAS realizations within 8 groupings of 16 portfolios (i.e. 8 groups of 4 by 4 matrices). Matrices are created by pooling our samples and creating quartile ranks (by year) for firms based on their effective tax rate and tax risk variable realizations. We then sort firm-years by pairing an effective tax rate outcome rank with every rank for a tax risk management outcome (and vice-versa). *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. Raw tax planning and tax compliance fees represent the amount in dollars (unscaled) collected in the fiscal year by auditors for tax planning and tax compliance work respectively. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *VOL\_OF\_CETR* = Standard deviation of one-year *CETR* over the time period t to t+4. *VOL\_OF\_GETR* = Standard deviation of one-year *GETR* over the time period t to t+4. The three highest fee ratios or raw fee amounts within each matrix are bolded. The four cells in the upper left quadrant are outlined as these would most likely represent the clients that simultaneously have lower effective tax rates and lower tax risk. See Appendix B for detailed variable definitions included data sources.

**Table 8**  
**Additional Analysis: Changes in Auditor Provided Tax Compliance and Tax Planning**

Dependent Variable Tax Fee Change Specification	<i>CHG_GETR (t, t+1)</i>				<i>CHG_CETR (t, t+1)</i>			
	<i>Continuous Change</i>		<i>Above Median Change</i>		<i>Continuous Change</i>		<i>Above Median Change</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>CHG_TAX_FEE_RATIO</i> (t-1, t)	0.004 (0.12)		-0.011** (-2.04)		-0.041 (-0.62)		0.005 (0.56)	
<i>CHG_TAX_PLAN_RATIO</i> (t-1, t)		-0.053 <sup>^</sup> (-1.30)		-0.017*** (-2.89)		-0.167** (-2.16)		-0.012 (-1.23)
<i>CHG_TAX_COMP_RATIO</i> (t-1, t)		0.032 (0.50)		-0.003 (-0.48)		0.113 (0.91)		0.013 (1.25)
<i>GETR</i> (t)	-0.525*** (-20.27)	-0.525*** (-20.29)	-0.526*** (-20.35)	-0.527*** (-20.40)				
<i>CETR</i> (t)					-0.673*** (-21.14)	-0.672*** (-21.17)	-0.673*** (-21.21)	-0.673*** (-21.16)
Constant	-0.113*** (-6.17)		-0.103*** (-5.51)	-0.110*** (-5.92)	-0.142*** (-3.33)	0.274*** (7.14)	0.275*** (7.16)	0.273*** (7.12)
Observations	2401	2401	2401	2401	2401	2401	2401	2401
Changes in Continuous Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Levels in Dichotomous Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted <i>R</i> <sup>2</sup>	0.284	0.284	0.285	0.285	0.318	0.319	0.318	0.319

Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level. <sup>^</sup>, \*, \*\*, and \*\*\* denote two-tailed statistical significance at 20%, 10%, 5%, and 1% respectively. *CHG\_GETR* is the change in *GETR* from t to t+1. *CHG\_CETR* is the change in *CETR* from t to t+1. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. *CHG\_TAX\_FEE\_RATIO*, *CHG\_TAX\_PLAN\_RATIO*, and *CHG\_TAX\_COMP\_RATIO* are the changes in total auditor provided tax fees divided by total audit fees, auditor provided tax planning services fees divided by total fees paid to the auditor and auditor provided tax compliance services fees divided by total fees paid to the auditor respectively. Changes are measured as amounts in t less amounts in t-1 and with above median change indicator variables. To construct the median change indicator, we identify observations where fees increased from t-1 to t. Then we take the median of these observations. If a firm-year increase is above the fiscal-year median then the indicator variable is set to 1, and zero otherwise. See Appendix B for detailed variable definitions included data sources.

**Table 9**  
**Additional Analysis: Univariate Tests of Firms Adding Auditor Provided Tax Planning**  
**NAS**

N		GETR		Raw Fees	
		Mean	Median	Mean	Median
	Pooled without planning	0.328	0.337	-	-
	Pooled with planning	0.304	0.323	153,399	57,187
86	Average paired sample change	-0.023**	-0.026		
	Test that change $\neq 0$ ( <i>p</i> -value)	(0.035)			

N		CETR		Raw Fees	
		Mean	Median	Mean	Median
	Pooled without planning	0.259	0.247	-	-
	Pooled with planning	0.224	0.221	153,399	57,187
86	Paired sample change	-0.035**	-0.023		
	Test that change $\neq 0$ ( <i>p</i> -value)	(0.017)			

This tables summarizes effective tax rates and uncertain tax benefits for companies in our sample that had a period with no auditor provided tax services (compliance or planning) followed by a period where the company engaged the auditor for tax planning services. Effective tax rates are separately averaged over the periods with and without tax planning. Summary statistics above represent the mean and medians of the “with planning” and “without planning” period effective tax rates. The t-test is to determine whether the paired with tax planning less without tax planning period averages are different from zero. Numbers in parentheses reported under paired sample changes are p-values. \*, denotes two-tailed statistical significance at 10%, 5%, and 1% respectively.

**Table 10**  
**Additional Analysis: Joint Provision of Tax Services**

Dependent Variable	<i>ETR</i>			<i>CETR</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>TAX_PLAN_RATIO</i>		-0.089** (-2.50)			-0.106** (-2.14)	
<i>TAX_PLAN_RATIO_WCOMP</i>	-0.131*** (-2.88)		-0.112** (-2.34)	-0.111* (-1.92)		-0.146** (-2.40)
<i>TAX_PLAN_RATIO_WOCOMP</i>	-0.070 (-1.14)		-0.068 (-1.12)	-0.079 (-0.84)		-0.081 (-0.87)
<i>TAX_COMP_RATIO</i>	-0.011 (-0.40)			0.018 (0.42)		
<i>TAX_COMP_RATIO_WPLAN</i>		-0.049 (-1.35)	-0.039 (-1.01)		0.050 (0.83)	0.068 (1.06)
<i>TAX_COMP_RATIO_WOPLAN</i>		0.009 (0.25)	0.010 (0.26)		-0.021 (-0.38)	-0.021 (-0.38)
Constant	0.406*** (7.78)	0.406*** (7.79)	0.404*** (7.72)	0.376*** (4.89)	0.384*** (4.96)	0.381*** (4.92)
Observations	3657	3657	3657	3657	3657	3657
Controls (Including <i>IMR</i> )	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted $R^2$	0.170	0.171	0.170	0.112	0.112	0.112

Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level. \*, \*\*, and \*\*\* denote two-tailed statistical significance at 10%, 5%, and 1% respectively. *TAX\_PLAN\_RATIO* = Auditor provided tax planning services fees divided by total fees paid to the auditor. *TAX\_COMP\_RATIO* = Auditor provided tax compliance services fees divided by total fees paid to the auditor. *TAX\_PLAN\_RATIO\_WCOMP* = Auditor provided tax planning services fees divided by total fees paid to the auditor when *TAX\_COMP\_RATIO* > 0, and equal to 0 otherwise. *TAX\_PLAN\_RATIO\_WOCOMP* = Auditor provided tax planning services fees divided by total fees paid to the auditor when *TAX\_COMP\_RATIO* = 0, and equal to 0 otherwise. *TAX\_COMP\_RATIO\_WPLAN* = Auditor provided tax compliance services fees divided by total fees paid to the auditor when *TAX\_PLAN\_RATIO* > 0, and equal to 0 otherwise. *TAX\_COMP\_RATIO\_WOPLAN* = Auditor provided tax compliance services fees divided by total fees paid to the auditor when *TAX\_PLAN\_RATIO* = 0, and equal to 0 otherwise. *GETR* = Effective tax rate calculated as total tax expense divided by pre-tax book income less special items. *CETR* = Cash effective tax rate calculated as cash taxes paid divided by pre-tax book income less special items. See Appendix B for detailed variable definitions included data sources. See Appendix B for detailed variable definitions included data sources.