

Did the 2005 Deferred Prosecution Agreement Adversely Impact KPMG's Tax and/or Audit Practices?

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September 30, 2015

Abstract: We examine the fallout on KPMG's tax and audit practices from the reputation loss following the 2005 deferred prosecution agreement (DPA) with the Department of Justice (DOJ) for marketing questionable tax shelters. We document that the DPA negatively impacted the firm's tax practice as proxied by lower tax service fees from audit clients. We also document that the DPA had a deterrent effect on tax avoidance by the firm's audit clients. Further, we find little or no evidence of recidivism in audit clients' tax avoidance behavior following the expiry of the five year DPA period. Relatedly, the existential threat posed by the DPA to KPMG may reasonably be expected to distract the firm's audit partners/staff and potentially harm the firm's audit quality. Alternatively, the firm could have improved its audit quality in an attempt to protect/defend its reputation. However, we find *no* evidence of a fallout on audit quality from the DPA which suggests that the firm was able to effectively insulate the audit practice from the firm's tax practice. Consistent with this finding, our results suggest that the DPA had no effect on the firm's audit fees or switching risk, i.e., audit committees also viewed the firm as effectively protecting its audit practice from its tax practice. In contrast to prior studies on auditor reputation (Skinner and Srinivasan 2012; Weber et al. 2008), our study is unique in that it examines the consequences to a Big 4 firm of reputation loss associated with a failure in its *nonaudit* (rather than audit) practice. Collectively, our tests find no systematic evidence that audit quality (factual or perceived) is influenced by reputational loss relating to tax service activities, which suggests that Big 4 firms are able to insulate their audit practice from failures in their tax practice.

Key Words: *DOJ/KPMG deferred prosecution agreement; reputational loss; audit and tax services fees; tax avoidance; Big 4 firms.*

***Authors' names are listed alphabetically. All data are publicly available. We thank Brant Christensen, Jere Francis, Frank Murphy (Discussant), Tom Omer, conference attendees at the 2015 AAA Annual meeting, and workshop participants at the University of Missouri-Columbia for their helpful comments on prior versions of this paper. Inder K. Khurana gratefully acknowledges funding from the KPMG Professorship at the University of Missouri-Columbia. K. K. Raman acknowledges funding from the Ramsdell Endowed Chair at The University of Texas at San Antonio.

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1. Introduction

In this paper, we examine the fallout on KPMG's tax and audit practices from the US Department of Justice's (DOJ) 2005 deferred prosecution agreement (DPA) with the firm for marketing questionable tax shelter products.¹ While prior research (e.g., Skinner and Srinivasan 2012; Weber et al. 2008) has examined the consequences of harm to a Big 4 auditor's reputation following an audit failure, our study is unique in that we examine a context where the reputation harm to a Big 4 auditor is the result of a failure in the firm's tax service.

Given the rising importance of nonaudit services – whether provided to audit or nonaudit clients – for the Big 4 firms, the Public Company Accounting Oversight Board (PCAOB) Chairman Doty (2014) suggests that within 10 years, revenues from public company audits may amount to less than 20 percent of aggregate revenues for these large audit firms. Along the same lines, PCAOB member Harris (2014) suggests that the rising importance of nonaudit services (albeit to their nonaudit clients) at the large audit firms can be a “potential distraction ...away from audit and its core values” (p. 5). To the extent this is true (and to the extent that KPMG's audit practice is *not* insulated from its tax practice), the existential threat posed by the 2005 *tax*-related DPA may reasonably be expected to distract the attention of the firm's *audit* partners/staff and adversely affect the firm's audit quality. Alternatively, such a threat could motivate the firm to improve its audit quality in an attempt to protect/defend its overall reputation as well as to avoid any DOJ-perceived violation of the DPA that might be triggered by audit failures involving alleged KPMG wrongdoing. Thus, while prior research and regulatory attention has focused on whether an audit failure (and related loss of reputation) impacts a Big 4 firm's audit practice (Skinner and Srinivasan 2012; Weber et al. 2008) and whether nonaudit services impair auditor independence and audit

¹ The 2005 DPA posed an existential threat for KPMG because of the potential for criminal indictment which, if it had come about, would necessarily have put the firm out of business. Separately, tax shelter products are designed to avoid taxation; they can be viewed as tax-motivated vehicles that use a literal interpretation of government statute or regulation to misstate economic income in a manner inconsistent with the intent of the law (Bankman 2003; Graham and Tucker 2006). In this study we use the term tax shelter(s) to refer to tax shelter product(s).

quality (Ashbaugh et al. 2003; Baumann 2010; DeFond et al. 2002; Doty 2014; Lisic et al. 2015; Reynolds et al. 2004), we focus on whether a failure in a Big 4 firm's tax practice (the 2005 DPA) impacted the firm's tax/audit practice and impaired its audit quality.

Notably, the 2002 Sarbanes Oxley Act (SOX) specifically allows audit firms to continue to provide tax services to their audit clients albeit subject to pre-approval by the client's audit committee. Moreover, although PCAOB rules prohibit contingent-fee arrangements and the marketing of transactions that represent an aggressive tax position, they allow the auditor to advise the client about the tax consequences of alternative ways of structuring a transaction provided it is "more likely than not" that the transaction is allowable under the tax laws and the significant purpose of the transaction is not tax avoidance (Laffie 2006). Further, despite the economic bonding (i.e., impaired auditor independence) argument that exists in the accounting literature, prior research largely suggests that joint provision of audit and tax services facilitates knowledge spillover, i.e., by providing tax services auditors obtain information about the client that improves, rather than impairs, the quality of financial statement audits (Kinney et al. 2004; Krishnan and Visvanathan 2011; Krishnan et al. 2013).

For KPMG's tax practice, we examine whether the DPA impacted the firm in the form of lower tax service revenues from audit clients.² We also examine whether the DPA deterred tax avoidance by the firm's audit clients and whether any such deterrence effect was conditioned by the economic bond between KPMG and its tax/audit clients. For the audit practice, we examine whether the DPA hurt the audit practice by lowering audit fees. We also test for reputational damage to the audit practice in the form of an increased likelihood of losing existing audit clients or a decreased likelihood of gaining new clients. We further examine whether the DPA affected the firm's audit quality. Finally, we examine

² These market-based losses would of course be in addition to the \$456 million fine paid by the firm to the US Treasury at the time of the DPA in August 2005. Compared to the size of the damage awards associated with lawsuits against public accountants, the \$456 million fine imposed by the DOJ on the US affiliate of KPMG is large. For example, in 2007, PricewaterhouseCoopers agreed to pay \$225 million to settle an investors' class action suit over an accounting scandal at Tyco International Limited. (Eigelbach 2011).

whether the fallout from the DPA for both the tax and audit practices reversed following the end of the firm's probation period in August 2010.

Our analysis is based on a sample of KPMG and other Big 4 audit clients during 2000-2014. For all of these tests we define four major periods for our analyses. The first is 2000-2002 (the pre-period), which encompasses the latter years of KPMG's aggressive tax shelter marketing. The second is 2003-2005 (the investigation period) in which KPMG was actively under investigation by the DOJ.³ The third is 2006-2009 (the probation period) when all provisions of the DPA were in full effect. The fourth is 2010-2014 (the post-period) after the end of KPMG's formal probation. We make numerous comparisons of KPMG audit clients across these four time periods, all of which are relative to clients of other Big 4 firms. Thus, all of our period-to-period "changes" are difference-in-differences changes relative to control groups of other Big 4 audit clients.

We find evidence consistent with the fallout from the DPA affecting KPMG's tax practice. That is to say, KPMG collected lower tax service fees in the probation period than in the pre-period. Specifically, KPMG went from collecting, on average, 17% less in tax fees per audit client than other Big 4 firms in the pre-period to collecting 36% less in the probation period. This decrease is statistically significant and holds after we control for multiple determinants of tax fees. Similarly, tax avoidance by KPMG audit clients was lower in the probation period than in the pre-period. As an example, KPMG audit clients had 3 Year GAAP effective tax rates (*ETRs*) that were, on average, 0.2 percentage points lower than that of other Big 4 audit clients in the pre-period. By contrast, KPMG audit clients had 3 Year GAAP *ETRs* that were 1.1 percentage points higher than that of other Big 4 audit clients in the probation period. Again, these results are statistically significant and hold in our multivariate analyses. Also, we find that the decline in tax avoidance displayed by KPMG audit clients (who also utilize the firm's tax services) following the DPA is concentrated in clients with less economic bonding as reflected by *below*-median tax (and other non-audit) service fees.

³ As discussed in Section 3.1, the 2003-2005 investigation period is excluded from our tests because of ambiguity vis-à-vis the appropriate event window cutoff.

Moreover, we find no evidence that the DPA impacted KPMG's audit practice. Specifically, we find that the audit quality of KPMG clients did not change between the pre and probation periods. In other words, the evidence suggests that KPMG was able to effectively insulate the firm's audit practice from its tax practice. Still, we note that KPMG remains the *only* Big 4 firm not censured to date by the PCAOB for deficiencies relating to firm-level audit quality controls identified by the Board's inspection reports. In other words, although we find no evidence the DPA impacted the firm's audit quality, it may have incentivized the firm to be more compliant with PCAOB requirements. We also find that audit fees for KPMG clients did not change between the pre and probation periods. Moreover, we find no evidence of a change in KPMG's ability to retain clients between the pre and probation periods and some evidence of a decrease in KPMG's ability to attract new clients between the two periods.

We also examine whether the DPA had a lasting effect on KPMG or whether the firm displayed recidivist behavior soon after the end of the probation period. We find no evidence of a reversal of the fallout from the DPA after the end of the probation period, i.e., the decline in tax service fees from, and tax avoidance by, KPMG audit clients between the pre and probation periods persists during the post period. The findings suggest that KPMG's near-death experience (as implied by the DPA with its potential for criminal indictment) continued to affect the firm's tax services (as measured by tax service fees as well audit clients' tax avoidance behavior) beyond the formal end date of the DPA itself.

Our study is related but different from the concurrent work by Finley and Stekelberg (2015) (hereafter FS), who also examine changes in tax service fees and tax avoidance by KPMG's audit clients surrounding the DPA. Consistent with FS, we document that following the DPA, KPMG earned lower tax service fees from audit clients. However, while FS report no evidence of a change in tax avoidance by KPMG clients following the DPA, we find that tax avoidance declined for KPMG clients during the probation (as well as the post-probation) period. In attempting to reconcile our findings with those of FS, we find that the difference is the result of a sample screen imposed by FS that we do not impose, i.e., FS eliminate a subsample of KPMG client observations with *below*-median economic bonding – specifically, those with *below*-median tax (and other non-audit) service fees -- where the tax avoidance effects

primarily occur.⁴ Thus we provide an explanation for why FS do not find the DPA to have a deterrent effect on tax avoidance by KPMG’s audit clients, whereas we do.

Our study contributes to the literature on the role of the Big 4 firms in corporate tax planning and the “bad consequences” potentially associated with what Sims and Sunley (1992, p. 455) call “maximizing private wealth at the expense of the income tax ... private optimization without remorse” through the development and marketing of questionable tax shelters. Specifically, we contribute to an understanding of the market-based reputational loss suffered by KPMG as a result of the DPA related to the firm’s tax shelters. To date, discussion of this investigation appears to have focused solely on the \$456 million fine paid by KPMG to the US Treasury. Our study examines the fuller impact of the first-ever DOJ DPA of a Big 4 firm, KPMG, and finds that it inflicted reputational harm on the firm’s tax practice as measured by lower fees from tax services. Further, our findings suggest that the DOJ investigation/DPA had both a punitive effect as well as a deterrent effect, i.e., it deterred tax avoidance in subsequent years. Thus, although KPMG was not the only Big 4 firm developing and marketing questionable tax shelters to its audit clients at the time, the DOJ DPA had a greater deterrent effect on KPMG audit clients relative to other Big 4 audit clients. Further, the reputation and deterrent effects of the DPA appear to have persistence, i.e., we see no evidence of recidivism in tax service fees or tax avoidance by KPMG audit clients even past the end of the firm’s probation period. Moreover, we find no evidence of a change in KPMG’s factual audit quality, suggesting that the DPA did not affect the *assurance* value of KPMG’s audits, even though the DPA may have affected the audits’ *insurance* value – as suggested by Brown et al. 2013 – by imposing a material \$456 million monetary penalty on the firm.

We also add to the understanding of the reputational firewall between the tax and audit practices of the Big 4 firms. While we document reputation loss and behavior deterrents for the tax practice in the

⁴ The bonding argument suggests that the auditor is *more* independent (i.e., *less* accommodative) of an audit client’s need to avoid tax when the auditor-client economic bond is *weaker*. Thus, in the aftermath of the DPA, KPMG became *less* accommodative of clients with *below*-median tax (and other nonaudit) service fees resulting in reduced tax avoidance by these clients.

wake of the DPA, our findings suggest that KPMG was able to effectively insulate the audit practice from the reputational harm suffered by the tax practice. In other words, although prior research suggests that there is useful information spillover from tax to audit, we show that KPMG effectively segregated negative news in the tax practice from impacting its audit practice. Consistent with these results, we also find that the DPA had no effect on the firm's audit fees or switching risk, which suggests that audit committees also viewed the firm as effectively protecting its audit practice from its tax practice. Along the same lines (and in contrast to prior studies on auditor reputation such as Skinner and Srinivasan (2012) and Weber et al. (2008)), our study suggests that for a Big 4 firm, loss of reputation associated with its *nonaudit* (rather than audit) practice has little or no consequence for its audit practice.

The rest of the paper proceeds as follows. Section 2 provides background information and develops our hypotheses. Section 3 discusses the research design and sample selection. Section 4 reports our empirical findings, and section 5 provides concluding comments.

2. Background and Hypotheses

2.1 Background

The supply of auditor-provided tax services to their audit clients goes back to the beginning of the 20th century when the income tax laws were first enacted. Subsequently, when the 1930s securities laws in the US required all publicly owned companies to issue audited financial statements (and granted audit firms the sole franchise to do the audits), the Securities and Exchange Commission (SEC) recognized that given their intimate familiarity with clients' businesses, it was only natural for auditors to continue to provide tax services to their audit clients (Rostain 2006). For similar reasons, the 2002 Sarbanes-Oxley Act (SOX) specifically identifies tax as an appropriate service that the auditor could continue to provide audit clients albeit with limitations and the pre-approval of the client's audit committee (Goodman 2004).

As discussed by Maydew and Shackelford (2007), auditor provided tax services historically consisted of tax compliance, tax advice, tax consulting, and tax planning. Auditors typically have a good working relationship with corporate CFOs and tax directors (who often may have begun their working careers at an audit firm), and have a good understanding of the interplay between tax planning and

financial reporting that may be specific to the client. Moreover, large US companies typically have a global footprint, and adequate tax planning is a complex undertaking requiring coordination of domestic as well as foreign operations across multiple business segments. Not surprisingly, the Big 4 audit firms also have a global footprint, operate in as many countries as their clients, specialize along industry lines, and essentially dominate the audit market for large companies in the US. Also, given the importance of earnings (and earnings per share) as corporate performance metrics, auditors - with their knowledge of GAAP - have a comparative advantage in designing and implementing corporate tax plans that will reduce not only actual taxes paid but also lower tax expense (and increase reported earnings) in company financial statements.

Until about the mid-1990s, corporate tax departments were largely viewed as cost centers with the mission of filing accurate tax returns on a timely basis and using “legal” tax-planning methods such as income shifting over time (i.e., taking advantage of timing differences) or benefiting from jurisdictional tax rate differences (Donohoe et al. 2014). Subsequently, there was a shift in norms to the Scholes and Wolfson (1992) framework whereby these departments began to transform themselves into profit centers with the mission of enhancing shareholder value by lowering the effective tax rate (Robinson et al. 2010). All of the current Big 4 firms aggressively participated in this transformation by developing and marketing tax shelters to corporate clients that relied on an aggressive interpretation of the tax law, lacked economic substance, were designed solely to reduce taxes, required confidentiality agreements (to avoid drawing public attention to the shelters), involved complex financial instruments that were perceived as too sophisticated for IRS auditors more used to auditing travel and entertainment receipts, and were likely to be successfully challenged if discovered during an IRS audit (Novack and Sanders 1998). However, the marketers relied on the complexity and the hidden nature of these tax shelters (resulting from the confidentiality agreements) to essentially bet that they would not be discovered by IRS auditors with limited resources. In other words, once the low odds of discovery from an IRS audit were factored in, the cost-benefit analysis leaned decidedly in favor of these tax shelters (Bankman 1999). Moreover, the firms allowed their audit clients to include the tax benefits on their financial statements, i.e., audit clients were

not required to set up a provision or reserve for uncertain tax positions despite the aggressive nature of the tax shelters.

Rostain (2006) notes that whereas the Big 4 firms were previously limited to an hourly rate or a flat fee for their tax services, the new shelters could be sold to corporate clients for the equivalent of a commission on the taxes saved and, consequently, for the first time tax professionals could “imagine earning incomes at the same levels as those enjoyed by investment bankers ...” (p. 95). To paraphrase Sims and Sunley (1992), during the late 1990s the incentives for maximizing private wealth at the expense of the income tax were not consistent with moderation in tax planning. Ultimately, perhaps it was not a matter of whether the US government would respond but how harsh the response would be. Although KPMG was perhaps no more aggressive than the other Big 4 firms in developing and marketing these tax shelters, its shelter marketing was essentially undone by Mike Hammersley, an internal whistleblower lawyer, who exposed the firm’s activities to the authorities.

In August 2002 Mike Hammersley was nearing consideration for partner in KPMG’s tax practice. He contacted the US attorney’s office after being pressured to sign a questionable tax opinion from which he had previously recused himself, an action that, due to the passage of SOX, could have resulted in a significant prison sentence. This set in motion a series of inquiries which included a US Attorney’s Office investigation, a US Senate probe, a US Senate hearing in which multiple KPMG partners were subpoenaed and forced to testify under oath, and a DOJ investigation. The DOJ investigation ultimately culminated in the August 2005 DPA.

The DPA deferred criminal prosecution against the legal partnership known as KPMG. It did not exonerate individual partners, some of whom were prosecuted in the following years. In the DPA, KPMG admitted to, among other things, “preparing false and fraudulent tax returns”, “issuing opinions that contained [false] and fraudulent statements”, and “impeding the IRS by knowingly failing to locate and produce all documents called for by IRS summonses”.

While the \$456 million fine included in the DPA has been widely publicized, the DPA also included other significant provisions, a number of which placed permanent restrictions on KPMG’s tax

practice. Among the more notable permanent restrictions were a forced closure of KPMG's private client tax practice and a ban on performing tax services under conditions of confidentiality. The DPA also set up a number of temporary provisions, all of which expired after a "probation" period ending in August 2010. One of the more notable examples of these temporary provisions was the establishment of an external DOJ monitor with broadly defined powers and charged with examining KPMG's compliance with the DPA. At the conclusion of the probation period, conditional upon KPMG's acceptable performance with the agreement, the DOJ's temporary deferral of prosecution would become permanent, although the permanent provisions of the DPA would not themselves expire.

It is the severity and unique nature of the DPA provisions that motivates much of our study. The next section discusses some of the implications of the DPA provisions as we develop our hypotheses.

2.2 Hypotheses

The impact of the 2005 DPA on KPMG's reputation, relative to that of the other Big 4 firms, is ambiguous. Karpoff (2012, p. 364) suggests that reputation loss can be viewed as "simply one of several types of bad consequences for business misconduct," and that market-based reputational losses can serve to punish as well as deter corporate misconduct. Further, Karpoff (2012) defines reputation as an intangible asset that allows a company to obtain higher fees for its services or sell the same merchandise at prices higher than that of other suppliers (Beatty et al. 1998; Resnick et al. 2006). Thus, reputational harm implies a loss of customers as well as lower fees from continuing clients. Klein and Leffler (1981) suggest that it is the threat of these bad consequences that is expected to provide companies the incentive to be legally compliant and behave honestly. Potentially, the admission of wrongdoing and the full extent of the tax sheltering activity made apparent by the DPA may have negatively impacted the reputation of KPMG's tax practice and thus impaired the market demand for its services, reducing tax service fees.⁵

⁵ Maydew and Shackelford (2007) suggest that the enactment of SOX in 2002 and the related scrutiny of auditor independence was associated with a decline in tax service fees paid to the incumbent auditor for all Big 4 audit firms. Note that our difference-in-differences analysis focuses on the potentially greater decline (if any) in KPMG tax service fees from audit clients relative to that of the other Big 4 firms.

On the other hand, Karpoff (2012) suggests that market-based reputational loss occurs only when the harmed parties have an ongoing relationship with the firm. In other words, one could argue that in the KPMG tax shelter example the harmed parties are not KPMG audit/tax clients who often bought the tax shelters knowing them to be the aggressive; rather the harmed party is the US Treasury which allegedly lost \$2.5 billion in evaded taxes due to KPMG marketed tax shelters. Further, prior to the DPA, KPMG was not alone in marketing questionable tax shelters. Beginning in the late 1990s, all of the Big 4 firms were aggressively hiring tax lawyers to expand their tax services by developing and marketing tax shelters as investment strategies to their clients (Bryan-Low 2003; Kahn 2003; Rostain 2006). Without an insider/whistleblower at the firm who provided the necessary details to the US government, KPMG would likely not have been singled out among the Big 4 firms for their shelter marketing. Although KPMG was the only Big 4 firm forced into a DOJ DPA, the other Big 4 also suffered IRS imposed penalties and potentially suffered similarly tainted reputations for marketing questionable tax shelters to their audit clients (Bryan-Low 2003; Kahn 2003). The implication of these arguments is that audit committees may view all the Big 4 firms (rather than just KPMG) as having a tainted reputation, and hence see little or no reason to negotiate lower tax fees with KPMG. Thus, our first hypothesis, stated in the null form, is as follows:

Hypothesis H1: There is no change in KPMG's tax service fees from audit clients (relative to that of the other Big 4 firms) in the probation period as compared to the pre-period.

The purpose of the DOJ DPA was not only to punish KPMG with the \$456 million fine but perhaps, more importantly, to deter illegal tax avoidance going forward. Given the DOJ monitoring set in place by the DPA and potential for greater IRS scrutiny, the firm may be expected to be more conservative in its tax advice to its audit clients. Consequently, there may be less overall tax avoidance on the part of the firm's audit clients following the DPA. On the other hand, although the DPA may be expected to make KPMG more risk-averse in its tax advice to its audit clients, the same may be expected to be true of the other Big 4 firms as well as they were also subject to IRS (and potentially DOJ)

investigations at the time.⁶ Relatedly, at the 2003 Enron congressional hearings there was considerable public discussion of the use of questionable tax shelters and the low rates at which companies were effectively taxed, which likely made companies more sensitive to adverse publicity and thus more risk-averse in their tax planning at the time (Donohoe et al. 2014). Thus, to the extent that all of the Big 4 were being investigated by (and settling with) the IRS for marketing questionable tax shelters to their audit clients, there may be no decrease in tax avoidance by KPMG audit clients, relative to other Big 4 audit clients, following the DPA. Thus, our second hypothesis, also stated in the null form, is as follows:

Hypothesis H2: There is no change in tax avoidance by KPMG audit clients (relative to that of the other Big 4 firms) in the probation period as compared to the pre-period.

The possible negative fallout from the DPA for KPMG's audit practice could motivate the firm to improve its audit quality in an attempt to protect/defend its reputation. Moreover, a series of lawsuits brought against KPMG by former clients besieged the tax practice for much of 2005-2007. This heightened litigation exposure experienced by the tax practice could potentially have spilled over to the audit practice. Prior research documents a strong positive relationship between litigation exposure and audit quality as measured by abnormal accruals (e.g., Heninger 2001, Venkataram and Weber 2008 and Boone, Khurana, and Raman 2011). Potential litigation is expected to make auditors more conservative, and thus constrain client behaviors, such as accruals-based earnings management, that could lead to litigation against the auditor. To the extent that the increase in litigation risk in the tax practice spilled over to the audit practice, one would expect an increase in KPMG's audit quality. Alternatively, the existential threat posed by the 2005 *tax*-related DPA to KPMG may reasonably be expected to

⁶ We acknowledge that a DOJ investigation is qualitatively different from an IRS investigation in that a criminal indictment (resulting from a DOJ investigation, as in the case of Arthur Andersen) can, for practical purposes, be a death sentence for a firm such as KPMG. Still, one can argue that following the criminal indictment and demise of Arthur Andersen in 2002 (and the resulting increase in supplier concentration in an already highly concentrated audit market), it was rather unlikely during 2002-2005 that the DOJ would actually pursue its investigation of KPMG to the point of killing off the firm. In other words, given the demise of Andersen in 2002 and the resulting increase in audit market concentration, during 2002-2005 it was arguably more likely than not that the DOJ would pursue a settlement rather than an indictment in the case of KPMG (McKenna 2014).

concentrate the minds of the firm's *audit* partners/staff (i.e., serve as a distraction) and adversely affect the firm's audit quality. Thus, our third hypothesis, also stated in the null form, is as follows:

Hypothesis H3: There is no change in KPMG audit quality (relative to that of the other Big 4 firms) in the probation period as compared to the pre-period.

While the DPA (and the related reputation loss inflicted on KPMG) were not triggered by or even related to the quality of the firm's audits per se, the DPA could have had a spillover effect on the reputation of KPMG's audit practice and the demand for KPMG's audit services. Hence, the bad consequence (reputation loss) suffered by KPMG from the DPA, although caused solely by its tax practice, could also trigger a decline in the demand for the firm's audit services. Consequently, we expect KPMG to experience a softening in the demand for both its tax as well as audit services, i.e., a decrease in KPMG fee revenues for its tax and audit services following the DOJ DPA. Alternatively, Beasley et al. (2009) suggest that audit committees view Big 4 audits as essentially a commodity with little or no variation in audit quality across the 4 firms, i.e., audit committees view variations among partners within the Big 4 firms as more important than the variations across the firms. With the limited choice of large auditors given the oligopolistic dominance of the audit market by the Big 4, clients' audit committees may see little or no reason to negotiate lower audit fees. Finally, as noted previously, the DPA with KPMG had little or nothing to do with the firm's audit quality further insulating the firm's audit practice from any potential reputation loss in the tax practice. Thus, our fourth hypothesis, also stated in the null form, is as follows:

Hypothesis H4: There is no change in KPMG's audit fees (relative to that of the other Big 4 firms) in the probation period as compared to the pre-period.

Finally, prior research (Klein and Leffler 1981; BKR 2015) also suggests that damage to reputation can result in clients attempting not only to negotiate a lower price (fee) but also potentially switching to another supplier. In the context of the DPA, the loss of reputation could result in KPMG audit clients not only attempting to negotiate a lower audit fee but also in attempting to switch to another

auditor. In other words, the reputational harm suffered by KPMG as a result of the DPA could increase the firm's switching risk for its audit clients, i.e., increase the likelihood of audit clients switching to another (albeit Big 4) auditor. Thus, our fifth (and final) hypothesis, also stated in the null form, is as follows:

Hypothesis H5: There is no change in the switching risk of KPMG audit clients (relative to that of the other Big 4 firms) in the probation period as compared to the pre-period.

3. Research Design

3.1 Sample Selection

We begin constructing our sample with the complete universe of Compustat firms for the years 2000 to 2014.⁷ We begin in 2000 because this is the first year for which reliable auditor data exists in the Audit Analytics database. Ideally, the sample period would begin in 1996, the first year in which KPMG was accused of, and later admitted to, marketing questionable tax shelters. However, data limitations prevent us from including these early years of tax shelter marketing. We then merge our Compustat sample with all information available in the Audit Analytics database from 2000 to 2014.

We exclude financial firms and regulated utilities (based on two-digit SIC code). We also delete firm-years with negative revenue (Compustat REVT), income (PI-SPI), tax expense (TXT), and taxes paid (TXPD) because these firms have notably different tax incentives.

We partition our 2000-2014 sample period into four periods; the pre-period (2000-2002), the investigation period (2003-2005), the probation period (2006-2009), and finally, the post-period (2010-2014). We exclude the investigation period (2003-2005) from the majority of our analyses because it is unclear as to the specific date within this period when the public first became aware of the seriousness of the DOJ investigation. In fact, in the DPA, KPMG admitted to obstructing the government investigators and attempting to hide the full extent of its questionable tax shelter marketing. This ambiguity makes defining a precise event window cutoff during the investigation period sufficiently difficult and supports

⁷ In order to have a 2000-2014 sample period, we use Compustat data from 1999-2014 so that lead/lag variables will not exclude the year 2000 from our analysis.

the removal of the 2003-2005 period from our sample. We end the probation period in 2009 for two reasons. First, the DPA forbade KPMG from claiming any defense based on the statute of limitations, or accruing time to the statute of limitations, for five years (ending in August 2010). This implies that audits and tax services for fiscal years 2005-2009 would have an abnormally long exposure to potential prosecution, while similar services for fiscal years 2010 and later would progressively become less exposed as the statute of limitations for various offenses gradually expired. Second, the DPA set up stringent external monitoring of KPMG for at least three years with an optional fourth year (ending all external monitoring in 2009). These two provisions of the DPA together created the strongest tax avoidance deterrents for KPMG (and its clients) from fiscal year 2006 through fiscal year 2009, with gradually decreasing deterrence thereafter.

We further limit our sample to only client-year observations with a Big 4 auditor, using the remaining Big 4 firms as a comparison group for KPMG. We do so (1) to avoid potential bias arising from cross-sectional variation in the unobserved factors that drive the Big 4/non-Big 4 auditor choice, and (2) to ensure that the comparison group also was actively involved in tax sheltering activity.⁸ This sample selection process yields a sample of 12,517 client-year observations for 4,071 firms before imposing any additional data requirements. We denote this group of observations the Audit Client (AC) sample. From the AC sample we also create the Audit and Tax Client (AT) sample which is the AC sample with the further requirement that each observation have a positive level of tax fees reported in Audit Analytics.

3.2 Model Specification

Difference in Difference Equations

To test our hypotheses, we estimate variations of the difference in differences model outlined in equation (1) using observations from the pre and probation periods:

$$Dep. Variable_{i,t} = \beta_0 + \beta_1 * KPMG_{i,t} + \beta_2 * Prob_{i,t} + \beta_3 * KPMG_{i,t} * Prob_{i,t} + \Sigma Controls_{i,t} \quad (1)$$

⁸ The Big 4 definition is based on Audit Analytics auditor_fkeys 1, 2, 3, and 4 and does not include Arthur Andersen in years 2000-2002.

where *Dep. Variable* is one of the dependent variables of interest to test our hypotheses. *KPMG* is an indicator variable that equals one if KPMG is the firm's auditor for that year, and zero otherwise. *Prob* is an indicator variable that equals one if the observation is from the years 2006-2009 (the probation period), and zero otherwise. *Controls* is a vector of k control variables defined in Appendix A and identified in prior research as variables associated with a particular dependent variable. Subscripts i and t denote client and year respectively. We follow Petersen (2009) and Gow, Ormazabal and Taylor (2010) and calculate the t-statistics based on standard errors that are corrected for client-level clustering for this and all subsequent models.

The coefficient β_3 captures the incremental change in the dependent variable between the pre and probation periods for KPMG audit clients relative to the change experienced by clients of other Big 4 firms. A significant coefficient on β_3 would reject the null hypothesis subject to test.

As a specification check, we modify equation (1) to allow potential probation period changes to differ for each year in 2006-2009. Specifically, we estimate the following equation (2):

$$\begin{aligned}
 Dep. Variable_{i,t} = & \beta_0 + \beta_1 * KPMG_{i,t} + \beta_2 * 2006_{i,t} + \beta_3 * 2007_{i,t} + \beta_4 * 2008_{i,t} + \beta_5 * 2009_{i,t} + \\
 & \beta_6 * KPMG_{i,t} * 2006_{i,t} + \beta_7 * KPMG_{i,t} * 2007_{i,t} + \beta_8 * KPMG_{i,t} * 2008_{i,t} + \beta_9 * KPMG_{i,t} * 2009_{i,t} + \\
 & \Sigma Controls_{i,t}
 \end{aligned} \tag{2}$$

where *2006*, *2007*, *2008*, and *2009* are year-specific indicator variables that equal one if the observation is from that year, and zero otherwise. All other variables are as defined in equation (1). The coefficients on the interaction terms between *KPMG* and the year-specific indicators capture the incremental change in *Dep. Variable* for KPMG audit clients relative to other Big 4 audit clients in that particular year. This year by year specification allows us to investigate if any overall effect observed in equation (1) is concentrated in a particular probation period year.

Dependent Variables

In our estimation of equations (1) and (2) we use numerous dependent variables. The natural log of tax fees reported in Audit Analytics, *Tax Fees*, is used to test H1 with respect to reputation damage in KPMG's tax practice.

To test H2 with respect to changes in tax avoidance, we calculate five dependent variables. *GAAP ETR* is calculated as total tax expense divided by pretax income minus special items. *3 Year GAAP ETR* is calculated by summing the components of *GAAP ETR* over years t-1 to t+1 before dividing. *CASH ETR* (Dyreng, Hanlon, and Maydew 2008) is calculated as cash taxes paid divided by pretax income minus special items. *3 Year CASH ETR* is calculated analogously to *3 Year GAAP ETR*. Consistent with Chen et al. (2010), ETR measures are bounded between 0 and 1, and set to missing if the denominator is less than or equal to zero. Collectively, the ETR measures capture the ability of a firm to reduce its tax burden relative to its level of income. Larger ETRs indicate lower levels of tax avoidance. We also calculate *BTD* (Frank, Lynch, and Rego 2009) as the difference between pretax income and an estimate of taxable income based on federal and foreign taxes payable and the prevailing corporate tax rate (35% in our study). Unlike the ETRs, larger *BTD* values indicate more tax avoidance.

To test H3 with respect to changing audit quality, we construct three accruals based proxies for audit quality. The first is *Abn Accruals* calculated as the residual from the Jones (1991) discretionary accruals model estimated for each year and 2 digit SIC industry code. We set this variable to missing for any industry-year combinations with less than five observations. The second is *Abs Abn Accruals*, calculated as the absolute value of *Abn Accruals*. The third is *KPM Abn Accruals* calculated as the difference in *Abn Accruals* between two firms matched on year, 2 digit SIC code, and net income scaled by total assets (Kothari et al. 2005).

The natural log of audit fees reported by Audit Analytics, *Audit Fees*, is used to test H4 with respect to reputation damage in the audit practice. To test H5 with respect to changing auditor switching risk, we construct *Switch* which is an indicator variable that equals one if the firm has a different auditor in years t and t-1, and zero otherwise.

4. Results

4.1 Descriptive Statistics and Tests of Mean Differences

Table 1, Panel A reports descriptive statistics for our regression variables in the pre and probation periods. All continuous variables have been winsorized at the 1st and 99th percentile to mitigate the

influence of outliers.⁹ Note that firm-years with KPMG as their auditor make up approximately 20% of our sample, and approximately 57% of our client-years come from the probation period. This is roughly in line with the fact that the probation period contains four years (2006-2009) and the pre-period only three (2000-2002).

Table 1, Panel B reports mean values of tax fees, audit fees, our five tax avoidance proxies, and *Abn Accruals* for KPMG and other Big 4 audit clients in the pre and probation periods as well as tests for differences in mean values. The tax and audit fees are calculated in their raw form before being logged for the regression analyses. An examination of differences in mean tax fees for KPMG over time is consistent with KPMG experiencing a reputation loss in its tax practice as reflected in mean tax fees. Mean tax fees for KPMG in the pre-period are 17% less than those for other Big 4 firms in the pre-period. However, mean tax fees for KPMG fall (in a relative sense) in the probation period to 36% less than those collected by other Big 4 firms. Unlike tax fees, KPMG mean audit fees appear to catch up to other Big 4 firms between the pre and probation periods, though in neither period are KPMG audit fees significantly different from other Big 4 auditors. These univariate results are consistent with reputational damage from the DPA on KPMG's tax practice, but they indicate no evidence of spillover effects for the audit practice.

Except for *GAAP ETR*, all our measures of tax avoidance reveal a pattern consistent with less tax avoidance by KPMG audit clients in the probation period. *3 Year GAAP ETR* is insignificantly different in the pre-period between KPMG and other Big 4 audit clients; it is significantly higher in the probation period. *Cash ETR* and *3 Year Cash ETR* are significantly lower in the pre-period for KPMG audit clients relative to other BIG 4 audit clients, and insignificantly different in the probation period. *BTD* is significantly higher for KPMG clients in the pre-period and insignificantly different in the probation period. These results appear to be economically significant, particularly for *Cash ETR*. *Cash ETR* is 2.6 percentage points lower for KPMG audit clients relative to other Big 4 audit clients in the pre-period and only .2 percentage points lower in the probation period. This is a 2.4 percentage point increase between

⁹ ETRs are not winsorized. They are instead bounded between 0 and 1.

the pre and probation periods relative to other Big 4 audit clients (or a 9.7% increase in the original *Cash ETR*). *BTD* declines from .027 in the pre-period for KPMG audit clients to .022 in the probation period. This drop in the book-tax difference is equivalent to .5% of total assets or 18.5% of the original book-tax difference. Overall, the univariate results for tax avoidance indicate that the DPA deterred tax avoidance by KPMG audit clients in the probation period.

The results for *Abn Accruals* reveal no meaningful patterns. The mean value of *Abn Accruals* for KPMG audit clients is insignificantly different from that of other Big 4 clients in both the pre and probation periods. We therefore find no univariate evidence of protection of the audit practice reputation via increased audit quality, litigation related spillover effects, or changes in audit management attention, as a result of DPA.

4.2 Correlations

Table 2 reports Pearson correlations for our dependent variables and select control variables. As expected, *ETR* measures consistently show a positive association with one another and a negative correlation with *BTD*. The probation period is associated with more tax avoidance (lower *GAAP ETR* and *3 Year GAAP ETR*). Similarly, the *KPMG* indicator is associated with more tax avoidance (lower *Cash ETR* and *3 Year Cash ETR*). The results are suggestive of the idea that KPMG audit clients in general exhibit more tax avoidance than their peers. To better understand how these three relationships interact contemporaneously, and whether they line up with the events surrounding the DPA, we turn to the multivariate results.

4.3 Regression Results – Dependent Variable: Tax Fees

We begin by investigating the effects of the DPA on KPMG's tax practice in Table 3 which reports results from the ordinary least squares estimation of equations (1) and (2) using *Tax Fees* as the dependent variable. The model is estimated using all observations with sufficient data from the AC sample and the pre and probation periods.

The explanatory power of the tax fees models is lower than that of the audit fees models in Table 7. Several control variables are significant with signs consistent with prior research and in accordance

with economic intuition. The coefficient on *Prob* is positive and significant at the 1% level in column (1).¹⁰ This suggests that the 2006-2009 probation period was generally marked by higher tax fees from audit clients.

In terms of our test of H1, the coefficient on *KPMG*Prob* in column (1) and the coefficients on *KPMG* and the year-specific indicator interactions in column (2) are of interest. All of these coefficients are negative and significant at the 1% level, suggesting that KPMG experienced a significantly lower increase in tax fees during the probation period, and that these effects are not concentrated in a particular year. These results reject H1 and are consistent with DPA damaging the reputation of KPMG's tax practice.

4.4 Regression Results – Dependent Variable: Tax Avoidance

We now test H2 by investigating whether the DPA deterred tax avoidance among KPMG tax clients. Table 4, Panels A and B report results from the ordinary least squares estimation of equations (1) and (2), respectively, using our tax avoidance measures as dependent variables. The model is estimated using observations with sufficient data from the AT sample and the pre and probation periods. Ideally, when investigating how the DPA influenced the tax avoidance of tax clients, we would identify all KPMG tax clients regardless of who they engaged as auditor. However, such a listing of clients is not publically available. Using the intersection of audit and tax clients available in Audit Analytics (the AT sample) is, to the best of our knowledge, the only feasible method to estimate the tax clientele for a Big 4 firm using publically available data. Our AT sample potentially excludes portions of KPMG's total tax

¹⁰ Although we offered no prediction for the sign of the *Prob* main effect, it is interesting to note that an increase in audit client tax fees in the probation period largely coincides with the passage and implementation of SOX. One of the main motivations of SOX was to restrict independence issues arising from non-audit services. Tax services are permitted by SOX, with certain limitations, but presumably the marginal effect of the limitations would be to lessen the amount of revenue received from audit clients for tax services. Yet Table 3 and Table 1: Panel B suggest that even with the passage of SOX, tax fees from audit clients grew in relative and absolute dollars for the industry at large between 2000-2002 and 2006-2009.

clientele in ways that may bias against finding results.¹¹ Thus we view our results based on the AT sample as representing a lower bound on the effects of the DPA on KPMG's tax practice.

It is worth noting that the 3 Year ETR measures have been calculated using the sum of the component variables across the years t-1, t, and t+1. This means that observations for 2002 (2006) include a portion of data from the year 2003 (2005) which is during the investigation period that we otherwise exclude. We do not consider the inclusion of 2003 and 2005 in the 3 Year ETR measures to be problematic. As discussed earlier, it is unclear at what point during the 2003-2005 investigation period the public became aware of the severity of KPMG's sheltering activity. This ambiguity manifests itself in the data as noise during the investigation period that biases results away. To the extent that 2003 and 2005 are noisy years for our data, inclusion of those years should bias against finding results

In terms of our test of H2, the coefficients on the *KPMG*Prob* interaction term are of interest in Panel A of Table 4. Except for the model with *GAAP ETR* as the dependent variable, the interaction term for all three other ETR measures is positive and significant at the 5% level. Additionally, the coefficient on the interaction term for *BTD* is negative and significant at the 5% level. Overall, the results for four of five measures of tax avoidance provide strong evidence that the tax avoidance of KPMG audit and tax clients declined relative to other Big 4 audit clients in the probation period. These results are consistent with the DPA deterring future tax avoidance for KPMG audit and tax clients.

The results in Table 4, Panel B, which allow the overall interaction effect to vary for each probation period year, do not provide any strong indication that the change in tax avoidance is

¹¹ Here two types of exclusions are of interest. One, the DPA between KPMG and the DOJ highlights high net worth individuals as one of the major customers of the questionable tax shelters. To the extent this set of KPMG clients exhibits the largest pre and probation period changes, any analysis performed using publicly available data in the Audit Analytics database is not going to capture a notable portion of KPMG's tax shelter clientele. Two, for those public company clients with data available on Audit Analytics, we would expect the largest behavior changes to come from clients with the greatest dependence on KPMG tax consulting. However, with the passage of SOX, tax consulting services must be approved by a firm's audit committee. This means that firms with a high level of tax consulting are less likely to have the same CPA firm as an auditor and as a tax consultant. Firms engaging KPMG as a tax consultant but not as an auditor are not included in the Audit Analytics database. Thus Audit Analytics will, almost by design, not reflect the relationships between KPMG and its significant public company tax clients where we expect the largest pre and probation period changes. Because these two types of exclusions can work against finding results, we interpret our results using Audit Analytics and the AT sample to be lower bounds of what we might observe if we had a more comprehensive sample of KPMG clients.

concentrated in any particular year. The pattern of even significance throughout the probation period is not as clear as Table 3. But what is clear in the results reported in Table 4, Panel B is that there is not any sort of consistent pattern that would indicate the overall *KPMG*Prob* interactions in Table 4, Panel A are being driven by a particular year of the probation period. This is consistent with the DPA deterring future tax avoidance in KPMG audit clients relative to other Big 4 clients (and doing so relatively evenly throughout the probation period).

Taken as a whole, our tax avoidance measures provide evidence that the tax avoidance of KPMG audit and tax clients decreased relative to other Big 4 audit clients between the pre and probation periods, rejecting H2. We interpret these results to be consistent with the DPA creating meaningful, KPMG specific, deterrents to future tax avoidance that influenced the behavior of KPMG audit and tax clients.

4.5 Additional Cross-sectional Analysis – Dependent Variable: Tax Avoidance

So far, we have documented an overall decline in tax avoidance for KPMG audit and tax clients between the pre and probation period. But if the incentives to decrease tax avoidance are stronger for KPMG advisors than KPMG tax clients, then we should observe variation in the decline between economically bonded clients. Economically bonded clients may be better able to resist what they perceive as overly conservative tax positions proposed by their KPMG advisors because the advisor is concerned with losing an important source of service fees.

Table 5 reports results from re-performing the analysis of Table 4, Panel A for two subsamples divided along measures related to economic bonding. For brevity, we omit the coefficients on the control variables, even though the control variables are identical to those used in models reported in Table 4, Panel A.

Subsamples in Table 5, Panel A, are formed based on the median level of tax fees. In terms of our test of H2, the coefficient on *KPMG*Prob* is uniformly significant for the below median subsample, indicating less tax avoidance for KPMG audit and tax clients in the probation period. In contrast, the coefficient on the *KPMG*Prob* term is only significant at the 10% level for the above median subsample

when using *3 Year Cash ETR* as the dependent variable. The coefficients on the interaction term for all other measures of tax avoidance are insignificant in the above median subsample.

Subsamples in Table 5, Panel B, are formed based on median level of non-audit service fees. The *KPMG*Prob* term loads in four of the five below median columns and in only one of five above median columns. In general, Table 5, Panel B provides evidence that the overall interaction effect from Table 4, Panel A is concentrated in firms with below median non-audit services.

These two panels together suggest that the overall changes in tax avoidance are concentrated in firms with below median tax fees and non-audit service fees. This is consistent with economic bonding between KPMG and high fee clients that enables the clients to better resist perceived overly conservative tax positions recommended by KPMG advisors in the wake of the DPA.

4.6 Regression Results – Dependent Variable: Audit Quality

We have documented thus far reputation damage for KPMG's tax practice in the wake of the DPA. Reputation damage spillovers can motivate the audit practice to increase audit quality to protect/defend its reputation. Similarly, litigation risk spillovers in the audit practice can cause KPMG auditors to become more conservative and increase audit quality.

Table 6 reports results from the ordinary least squares estimation of equations (1) and (2) using our accruals based measures of audit quality as the dependent variable. The model is estimated using all observations with sufficient data from the AC sample and the pre and probation periods. In terms of our test of H3, the coefficients on *KPMG*Prob* are uniformly insignificant across all columns. Thus, we fail to reject H3. In untabulated results we re-perform the analyses in Table 6 partitioning the sample on median tax fees or median non-audit fees to test whether, similar to tax avoidance, there is an effect for non-economically bonded clients. Across all subsamples, the coefficients on the *KPMG*Prob* interaction are insignificant. We thus find no evidence that KPMG audit quality changed between the pre and

probation periods, implying no spillover effects between KPMG's tax and audit practices that would influence audit quality.¹²

4.7 Regression Results – Dependent Variable: Audit Fees

Next, we examine whether spillover effects come in the form of reputation damage, leading to lost audit service fees. Table 7 reports results from the ordinary least squares estimation of equations (1) and (2) using *Audit Fees* as the dependent variable. The model is estimated using all observations with sufficient data from the AC sample and the pre and probation periods.

The Adj-R² are around 0.69. Moreover, the control variables are significant with signs consistent with prior research and in accordance with economic intuition. In column (1), the coefficient on the *Prob* variable is positive and significant at the 1% level. This is consistent with prior research (e.g., Raghunandan and Rama 2006; Ghosh and Pawlewicz 2009) that has documented an increase in audit fees in the post-SOX period, which largely coincides with our probation period.

In terms of our test of H4, the coefficient on *KPMG*Prob* in column (1) and the coefficients on the interactions of *KPMG* with the year indicator variables in column (2) are of interest. None of these coefficients are statistically significant at the 10% level. In other words, we fail to reject H4. In untabulated results we re-perform the analyses in Table 7 partitioning the sample on median tax fees or median non-audit fees. Across all subsamples the *KPMG*Prob* interaction is insignificant. Thus we find no evidence of reputational damage spillover between KPMG's tax and audit practices in the form of lost audit fees.

4.8 Regression Results – Dependent Variable: Auditor Switch

Karpoff (2012) suggests that reputation damage results in lost revenue and lost clients. Thus we estimate a modified equation (1) and (2) to investigate whether reputational damage spillovers manifested

¹² It is also possible that audit practice effects are limited to a particular office, and searching for effects at the firm level lacks sufficient power to detect them. Since the KPMG office in New York was the focal point of much of the litigation and media scrutiny, we re-perform this and all subsequent audit practice tests limiting the sample to audit clients in either New York City, New York State, or the Mid-Atlantic region of the US. We find no evidence of audit practice spillover effects in any of these tests.

in the audit practice in the form of loss of existing clients or an impaired ability to attract new clients. Consistent with Boone et al. (2015), in the client loss analysis we create the variable *KPMG PY* which equals 1 if the firm has KPMG as their auditor in year t-1, and in the client gain analysis we created the variable *KPMG* which equals 1 if the firm has KPMG as their auditor in year t. The loss analysis requires that the firm use a Big 4 auditor in the prior year, but no such requirement is imposed in the current year, thus allowing us to capture client losses to the remaining Big 4 or to non-Big 4 auditors. The gain analysis requires that the firm use a Big 4 auditor in the current year, but no such screen is imposed in the prior year, thus allowing us to capture client gains from the remaining Big 4 or from non-Big 4 auditors. Finally, the control variables in the client gain/loss analysis are taken from year t-1, whereas control variables in all other analyses come from the current (i.e., t) fiscal year.

Table 8 reports results from the logistic estimation of the modified equations (1) and (2) using *Switch* as the dependent variable. The model is estimated using all observations with sufficient data from the AC sample and the pre and probation periods. In column (1) the coefficient on *KPMG*Prob* captures the change in the client gain rate for KPMG during the probation period. The coefficient is negative and significant at the 5% level, suggesting that KPMG experienced some reputation damage that affected its ability to gain new audit clients. In column (2) the coefficient on *KPMG PY*Prob* captures the change in the client loss rate for KPMG during the probation period. The coefficient is not significant at the 10% level. Thus, we find no evidence that reputation damage spillovers affected KPMG's ability to retain existing clients.

In untabulated results we re-perform the analyses in Table 8 partitioning the sample on median tax fees or median nonaudit service fees. For the *client gains - below median tax fees* subsample the *KPMG*Prob* interaction term is significant with a coefficient (t statistic) of -.994 (-2.49). By contrast, across all other subsamples the *KPMG*Prob* and *KPMG*Prob PY* interactions are insignificant.

In total, Table 8 and the untabulated results provide at best weak and inconsistent evidence of reputation damage spillovers between the tax and audit practices. Theoretical arguments can be made to explain why less severe reputation damage could hurt client gain rates but not client loss rates. Switching

costs increase the damage necessary for a client to leave as opposed to never engaging an auditor in the first place. Yet in the context of the DPA, we would have expected reputation damage spillovers, if they existed at all, to be severe enough to influence both client gains and client losses. We are thus prone to interpret the inconsistent evidence of spillovers between gains and losses as no evidence at all which would be consistent with the results in Tables 6 and 7.

4.9 Regression Results – Recidivism in Fees and Tax Avoidance

In this section, we report results relating to reputation and tax avoidance recidivism after the expiry of the probation period. Because we did not reject our hypotheses relating to the audit practice (H3, H4, H5), there is no probation period change to reverse in the post period. We do not report regression results for detecting a change in abnormal accruals, audit fees, or the *Switch* variable between the probation and post periods.¹³ It is possible for the probation period changes to reverse in the post period (2010-2014) because reputational losses from the DPA abate with time, particularly after many of the provisions of the DPA that serve to remind clients of past misconduct expire. Further, the expiration of many of the provisions of the DPA that may have deterred tax avoidance in audit clients could shift advisor and client incentives back towards tax avoidance in the post period. Alternatively, it is plausible that reputational losses persist beyond the specific provisions of the DPA because permanent provisions of the DPA (e.g., a permanent prohibition on providing tax services under conditions of confidentiality) deter tax avoidance and maintain heightened litigation risk beyond the formal end of the probation period.

To test for recidivism in DPA effects after 2009, we modify equations (1) and (2) by replacing the *Prob* variable with *Post*, as outlined in equations (3) and (4), and estimate them using observations from the probation and post periods:

$$Dep. Variable_{i,t} = \beta_0 + \beta_1 * KPMG_{i,t} + \beta_2 * Post_{i,t} + \beta_3 * KPMG_{i,t} * Post_{i,t} + \Sigma Controls_{i,t} \quad (3)$$

$$Dep. Variable_{i,t} = \beta_0 + \beta_1 * KPMG_{i,t} + \beta_2 * 2010_{i,t} + \beta_3 * 2011_{i,t} + \beta_4 * 2012_{i,t} + \beta_5 * 2013_{i,t} +$$

¹³ Though in untabulated results we confirm that these dependent variables do not change for KPMG audit clients between the probation and post periods.

$$\beta_5*2014_{i,t} + \beta_6*KPMG_{i,t}*2010_{i,t} + \beta_7*KPMG_{i,t}*2011_{i,t} + \beta_8*KPMG_{i,t}*2012_{i,t} + \beta_9*KPMG_{i,t}*2013_{i,t} + \beta_{10}*KPMG_{i,t}*2014_{i,t} + \Sigma Controls_{i,t} \quad (4)$$

where *Dep. Variable* is either *Tax Fees* or a measure of tax avoidance, *Post* is an indicator variable that equals one if the observation is from the years 2010-2014, and zero otherwise. *2010*, *2011*, *2012*, *2013* and *2014* are year-specific indicator variables that equal one if the observation is from that year, and zero otherwise. All other variables are as defined in equation (1).

Similar to equation (1), the coefficient on β_3 in equation (3) captures the incremental change in *Dep. Variable* between the probation and post period for KPMG audit clients over and above the change experienced by audit clients of other Big 4 firms. Similar to equation (2), the interactions between *KPMG* and the year specific indicators in equation (4) capture the incremental change for KPMG audit clients in that specific year and allow us to investigate if any overall changes are concentrated in a particular post period year.

Table 9 reports results from the ordinary least squares estimation of equations (3) and (4) using *Tax Fees* as the dependent variable. The model is estimated using all observations with sufficient data from the AC sample and the probation and post periods. The coefficients on *KPMG*Post* and the *KPMG* and year interactions are not statistically significant with one exception. The one exception is the *KPMG*2012* interaction which is positive and significant at the 5% level. In total, we find no evidence that tax fees for KPMG returned to pre period levels in the post period. In fact, the *KPMG* main effect variable is negative and highly significant in Table 9 whereas it was insignificant in Table 3. This suggests that the decline in tax service fees from reputation damage persisted to the end of our sample, creating a permanent discount in KPMG tax services after 2006.

Table 10, Panels A and B report regression results from the ordinary least squares estimation of equations (3) and (4) respectively using our tax avoidance measures as the dependent variable. The model is estimated using observations from the AT sample and the probation and post periods. The coefficients on *KPMG*Post* are uniformly insignificant in Panel A. In Panel B the *KPMG* and year interactions are generally insignificant as well. The only exception occurs late in the sample period. Overall, we do not

find consistent evidence of recidivism in tax avoidance by KPMG audit/tax clients and interpret the change in tax avoidance during the probation period to be persistent.

4.10 Reconciliation with concurrent work

Concurrent work by Finley and Stekelberg (FS) also examines the effects of the DPA on KPMG's tax practice. They investigate reputation damage as manifested in the form of decreased tax fees, and find a decrease in KPMG's tax fees after the DPA, which is consistent with our results. They also examine changes in tax avoidance by KPMG audit and tax clients around the DPA. FS find no evidence that tax avoidance declined after the DPA, whereas we do.

We identify two major differences in the research designs used by FS and us. The first is the sample period. We replicate their sample period (2002-2004 and 2006-2008) and use their definition for the probation period (2006-2008) and still find significant declines in tax avoidance after the DPA.

The second major difference is the application of a minimum tax fees to audit fees ratio of 10% in order for observations to be included in the FS sample. When we apply this criteria to our sample and reestimate our models using the five tax avoidance measures, the statistical significance of our results showing a decrease in tax avoidance for KPMG clients in the probation period largely disappears. Similarly, the tax avoidance results disappear in our replication of the FS sample period when this ratio is applied. Further, when we split our sample based on observations above/below the 10% ratio, we find that tax avoidance in the probation period declines for the subsample of observations below the 10% ratio. We conclude that application of this ratio explains the difference in results between the two studies. We also note that the concentration of tax avoidance in the subsample below the 10% ratio is consistent with the results we report in Table 5 where we find the declines in tax avoidance are concentrated in firms with below median tax fees and non-audit service fees.

4.11 Robustness Tests

In this section, we conduct several robustness tests.

So far, our tests exclude the years 2003-2005 because of the noise induced by the DOJ investigation leading up to the DPA. As a robustness test, we include these years as a part of the probation

period and redo our main analyses. Specifically, we use all observations from 2000-2009, set the *Prob* indicator equal to one if the observation is from the years 2003-2009 and re-perform the analyses in Tables 3 and 4. Our inferences for *Tax Fees* based on Table 3 column (1) remain unchanged. The *KPMG*Prob* interaction is negative and significant with a coefficient (p-value) of -.693 (.008). However the *KPMG* and year specific indicator interactions, similar to those in Table 3 column (2), do not become significant until 2007. Similarly, when we re-do the analysis in Table 4, Panel A the *KPMG*Prob* interactions for *3 Year GAAP ETR* and *3 Year Cash ETR* remain significant at the 5% and 1% level respectively. But when we redo the analysis in the Table 4, Panel B, the coefficients on the interactions of *KPMG* and year specific indicators are generally not significant until 2005. While these re-estimations confirm that our results are generally robust to the inclusion of the investigation period, they also validate our concerns that the investigation period was noisy and without clear event cut offs. The DPA in 2005, not the DOJ investigation in and of itself, appears to be the substantial driver of our tax fees and tax avoidance results.

It is possible that our pre versus probation period results are driven by changes in the makeup of the Compustat universe of firms. We therefore re-estimate all of our pre versus probation period tests using a balanced panel of data. We balance the panel by requiring a firm to appear at least once in both the pre and probation periods. Our inferences for tax fees and tax avoidance remain unchanged. Tax fees significantly declined for KPMG audit clients in the probation period. Tax avoidance by KPMG audit and tax clients significantly declined in the probation period. And the tax avoidance decline is concentrated in firms with below median levels of tax fees (although our nonaudit service fees partitioning yields indeterminate results in the balanced panel). We also find no evidence of audit practice effects re-performing all of the analyses in Tables 6-8 using this balanced panel.

It is also possible that changes in the makeup of KPMG clientele drive our pre versus probation period results. This is not necessarily inconsistent with our story. Reputation damage and more conservative tax guidance may be expected to alter the makeup of tax practice clientele. But whether the results are driven by existing or new KPMG clients is interesting in and of itself. To test this issue, we re-

estimate our pre versus probation period results replacing the *KPMG* and *KPMG*Prob* variables with *KPMG_Old*, *KPMG_New*, *KPMG_Drop*, and their interactions with *Prob*. *KPMG_Old* equals one if the firm had KPMG as their auditor for at least one year in both the pre and probation periods. *KPMG_New* equals one if the firm had KPMG as their auditor for at least one year in the probation period and no years in the pre period. *KPMG_Drop* equals one if the firm had KPMG as their auditor for at least one year in the pre period and no years in the probation period. For our tax fees tests we find that the interactions *KPMG_Old*Prob* and *KPMG_New*Prob* are both significantly negative at the 5% level. *KPMG_Drop*Prob* is insignificant. This suggests that clients that stayed with KPMG and new clientele both accrued a reputation related discount in tax fees but clients that switched to another auditor maintained roughly the same level of tax fees in the probation period. For our tax avoidance results, we find that the probation period decline in tax avoidance is driven exclusively by the *KPMG_Old* clients. *KPMG_Old*Prob* is significant in the same direction and at a similar level as *KPMG*Prob* in Table 4, Panel A. This suggests that firms that had KPMG as a tax consultant in both the pre and probation periods decreased their level of tax avoidance in the probation period. We find no evidence of tax avoidance changes for the *KPMG_New* or *KPMG_Drop* groups. And again we find no evidence of audit practice changes across any of these groups.

For our tests using ETRs as the dependent variables, we use 3 year ETR measures to smooth out inherent volatility in our ETR tax avoidance proxies. This creates a timing difference between our dependent and independent variables that may induce bias into our results. In untabulated results we re-estimate Table 4 with average control variables using the three year rolling window $t-1$, t , and $t+1$. Our results are inferentially similar to those reported in Table 4, and we conclude that our findings are not driven by a difference in timing between our dependent and independent variables.

Our tax avoidance proxies capture a mixture of both legal and potentially illegal tax strategies whereas the DPA was primarily concerned with illegal tax strategies. In untabulated results we use the Wilson (2009) shelter probability score as our tax avoidance proxy to focus on the likelihood that KPMG audit clients were using tax shelters (relative to other Big 4 audit clients). We estimate equations (1) and

(2) using the shelter probability as the dependent variable and find that the *KPMG*Prob* interaction is negative with a coefficient (p-value) of -.394 (.099) and find no evidence of interaction concentration in any particular probation period year. Similar to Table 10, we find no evidence of tax avoidance recidivism when we use the shelter probability as our dependent variable in equation (3). This evidence supports a decline in the likelihood of sheltering activity by KPMG audit clients in the probation period and is consistent with the DPA creating KPMG specific tax avoidance deterrents, and suggests that the decline was persistent in the post period.

One useful tax avoidance proxy unavailable for our main analysis is the unrecognized tax benefit (UTB). Fin 48 UTB disclosures began in 2006 (with mandatory public company adoption in 2007) precluding their use as a tax avoidance proxy between our pre and probation periods. However, in untabulated results we use the natural log of one plus the UTB as our dependent variable for equation (3) to compare between the probation and post periods. We find the *KPMG*Post* interaction is insignificant with a coefficient (p-value) of -.036 (.825) and find no evidence of year specific concentration. Though we have no data to test whether the UTB changed between the pre and probation periods, this result is consistent with Table 10 and is further evidence that tax avoidance by KPMG audit clients did not change between the probation and post periods.

Our models as specified do not control for fixed average differences between individual years (aside from those explicitly tested with interactions), Big 4 auditors (other than KPMG), or firm industries. In untabulated results we re-do all of our analyses with year, auditor, or industry fixed effects (based on 2 digit SIC code). Our results remain virtually unchanged in all cases. We therefore conclude our results are not driven by uncontrolled fixed differences.

5. Concluding Remarks

The 2002-2005 DOJ investigation of KPMG for its role in the development and marketing of questionable tax shelters resulted in a 2005 deferred prosecution agreement (DPA) which imposed a \$456 million fine as well as greater regulatory scrutiny of the firm. Our study examines whether (1) the firm's tax practice suffered market-based reputational loss in the form of lower fees for its tax services, (2)

whether the DPA had a deterrent effect, i.e., whether KPMG audit/tax clients engaged in less tax avoidance following the DPA, (3) whether the change in tax avoidance (following the DPA), if any, was related to the level of economic bonding between KPMG and its audit/tax clients, (4) whether the DPA impacted the quality of KPMG's audit services, (5) whether the DPA-inflicted reputation loss, albeit triggered by the firm's tax practice, spilled over to its audit practice in the form of lower audit fees and/or higher switching risk, and (6) whether any of these effects reversed after the expiry of the DPA probation period. Because KPMG was not alone in developing and marketing questionable tax shelters in the late 1990s/early 2000s, our analysis uses other Big 4 clients as a control sample so that all changes are measured relative to those of the other Big 4 firms.

In theory, market-based reputational loss can punish as well deter corporate misconduct (Klein and Leffler 1981). However, Karpoff (2012) suggests that companies suffer market-based reputational losses for misconduct only when the harmed parties have an ongoing business relationship with the company, i.e., only if the firm's counterparties (clients) alter the terms of ongoing or future contracts resulting in the company losing sales or facing lower selling prices. In the case of KPMG, the US Treasury was the primary harmed party (as a result of lost tax revenues) and it is not clear whether the firm's clients were also a harmed party since they bought the firm's tax shelters - which they often knew to be aggressive - voluntarily. Still, our results suggest that following the DPA, KPMG suffered lower tax service revenues from its audit clients and that this decline has since been impounded as a persistent discount for KPMG tax services.

The purpose of the DPA was not only to punish but also deter tax avoidance. Our results indicate that the DPA reduced tax avoidance by KPMG audit clients relative to audit clients of other Big 4 firms. We also find that the decline in tax avoidance is concentrated among clients with *below*-median tax service and nonaudit service fees, consistent with the notion that auditors tend to be more independent (less accommodative) of client needs such as tax avoidance when the auditor-client economic bond is

weaker.¹⁴ Also, our findings are consistent with *no* recidivism, i.e., as of 2014 (the end period of our study) KPMG audit clients continue to show reduced tax avoidance (relative to other Big 4 audit clients) even after the expiry of the 5 year probation period in 2010.

Despite the notable effects of the DPA on KPMG's tax practice, we find little to no evidence that the DPA impacted KPMG's audit practice -- either in terms of audit quality, audit fees or client switching risk -- over the same time period.¹⁵ In contrast to prior studies on auditor reputation (Skinner and Srinivasan 2012; Weber et al. 2008), our study examines the consequences to a Big 4 firm of reputation loss associated with a failure in its *tax* (i.e., nonaudit rather than audit) practice. In particular, our finding that the DPA had no effect on KPMG audit quality is consistent with our finding of no effect on KPMG audit fees or switching risk. In other words, our finding that the DPA had no impact on KPMG's factual audit quality is consistent with how audit committees perceived the firm, i.e., as effectively protecting its audit practice from its tax practice. Our lack of systemic evidence linking reputation loss in tax service activities and audit quality (factual or perceived) suggests that the Big 4 firms are able to insulate their audit practice from failures in their tax practice.

¹⁴ The basic idea here is that clients prefer to avoid tax and that KPMG, in the aftermath of the DPA, was less likely to accommodate this preference for audit clients with a weaker auditor-client economic bond, i.e., clients who bought below-median amounts of tax and (other nonaudit) services from KPMG.

¹⁵ As noted earlier, although the DPA may not have impacted the firm's audit quality, it appears to have incentivized the firm to be more compliant with PCAOB requirements, i.e., to date KPMG remains the only Big 4 firm not censured by the PCAOB.

References

- Agreement. DOJ Court Filings: KPMG – Deferred Prosecution Agreement. Southern District of New York. 26 Aug. 2005.
- Ghosh, A., and R. Pawlewicz 2009. The Impact of Regulation on Auditor Fees: Evidence from the Sarbanes-Oxley Act. *Auditing: A Journal of Practice & Theory* 28 (2): 171-197.
- Ashbaugh, H., LaFond, R., and B. Mayhew. 2003. Do Nonaudit Services Compromise Auditor Independence? Further Evidence. *The Accounting Review* 78 (3): 611-639.
- Bankman, J. 1999. The new market in corporate tax shelters. *Tax Notes* (June 21): 1775-1800.
- Bankman, J., 2003. The tax shelter battle. In: Aaron, H., Slemrod, J. (Eds.), *Crises and Tax Administration*. Brookings Institution, Washington DC.
- Baumann, M. 2010. Presentation to the AICPA National Conference. (December 7):http://pcaobus.org/News/Speech/Pages/12072010_BaumannAICPAPresentation.aspx.
- Beasley, M., J. Carcello, D. Hermanson, and T. Neal. 2009. The audit committee oversight process. *Contemporary Accounting Research* 26(1): 65-122.
- Beatty, R., H. Bunsis, and J. Hand. 1998. The indirect economic penalties in SEC investigations of underwriters. *Journal of Financial Economics* 50(2): 151-186.
- Brown, D., S. Shu, B. Soo, and G. Trompeter. 2013. The Insurance Hypothesis: An Examination of KPMG's Audit Clients around the Investigation and Settlement of the Tax Shelter Case. *Auditing: A Journal of Practice & Theory*. 32(4). 1-24.
- Boone, J., I. Khurana, and K. Raman. 2011. Litigation Risk and Abnormal Accruals. *Auditing: A Journal of Practice & Theory* 30(2): pp. 231-256.
- Boone, J., I. Khurana, and K. K. Raman. 2015. Did the 2007 PCAOB Disciplinary Order against Deloitte Impose Actual Costs on the Firm or Improve Its Audit Quality? *The Accounting Review* 90 (2): 405-441.
- Bryan-Low, C. 2003. Unhappy returns: Accounting firms face backlash over the tax shelters they sold – bad end to a big 1990s push. *Wall Street Journal*. (Feb. 7): A1
- Chen, S.; X. Chen; Q. Cheng; and T. Shevlin. 2010. Are Family Firms More Tax Aggressive than Non-Family Firms? *Journal of Financial Economics* 95: 41–61.
- DeFond, M., K. Raghunandan, and K. Subramanyam. 2002. Do nonaudit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research* 40, 1247-1274.
- Donohoe, M., G. McGill and E. Outslay. 2014. Risky business: The prosopography of corporate tax planning. *National Tax Journal* 67(4): 851-874.
- Doty, J. 2014. Strategic opportunities and challenges for the auditing profession. AICAP Conference on Current SEC and PCAOB Developments. (http://pcaobus.org/News/Speech/Pages/12082014_Doty_AICPA.aspx).

- Dyreng, S., M. Hanlon; and E. Maydew. 2008. Long Run Corporate Tax Avoidance. *The Accounting Review* 83: 61–82.
- Eigelbach, K., 2011. Accounting firms' need for liability insurance increases as down economy results in unhappy clients. *Louisville Business First*
<http://www.bizjournals.com/louisville/print-edition/2011/09/30/accounting-firms-need-for-liability.html?page=all>
- Frank, M., L. Lynch; and S. Rego. 2009. Tax Reporting Aggressiveness and Its Relation to Aggressive Financial Reporting. *The Accounting Review* 84: 467–496.
- Finley, A. and J. Stekelberg. 2015. The Economic Consequences of Tax Service Provider Sanctions: Evidence from KPMG's Deferred Prosecution Agreement. *Journal of American Taxation Association* (forthcoming).
- Goodman, G., 2004. The taxpayer's and tax adviser's guide to SOX. *Tax Notes* (August 4): 691-712.
- Gow, I., G. Ormazabal, and D. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85(2): 483-512.
- Graham, J., and A. Tucker. 2006. Tax Shelters and Corporate Debt Policy. *Journal of Financial Economics* 81 563-594.
- Harris, S. 2014. The rise of advisory services in audit firms. Speech delivered at Practising Law Institute 12th annual Directors' Institute on Corporate Governance (November 24).
http://pcaobus.org/News/Speech/Pages/11242014_Harris.aspx.
- Heninger, W., 2001. The association between auditor litigation and abnormal accruals. *The Accounting Review* 76(1): 111-126.
- Jones, J., 1991. Earnings management during import relief investigations. *Journal of Accounting Research* : 193-228.
- Kahn, J. 2003. Do accountants have a future? *Fortune* 147(4): 115-116.
- Karpoff, J. 2012. Does reputation work to discipline corporate misconduct? In: Barnett, M., and T. Pollock. *The Oxford Handbook of Corporate Reputation* Oxford, UK: Oxford University Press.
- Kinney, Jr., W., Z. Palmrose, and S. Scholz. 2004. Auditor independence, non-audit services, and restatements: Was the U.S. government right? *Journal of Accounting Research* 42 (3): 561- 588.
- Kothari, S., A. Leone, and C. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197.
- Klein, Benjamin, and Keith B. Leffler. "The role of market forces in assuring contractual performance." *The Journal of Political Economy* (1981): 615-641.
- Krishnan, G., and G. Visvanathan. 2011. Is there an association between earnings management and auditor provided tax services? *Journal of the American Taxation Association* 33(3): 111-135.

- Krishnan, G., G. Visvanathan, and W. Yu. 2013. Do auditor provided tax services enhance or impair the value relevance of earnings? *Journal of the American Taxation Association* 35(1): 1-19.
- Laffie, L. 2006. SEC approves PCAOB rules for tax services. *The Tax Adviser* 37 (August): 444-445.
- Maydew, E., and D. Shackelford. 2007. The changing role of auditors in corporate tax planning. In: Auerbach, A., and J. Hines and J. Slemrod. *Taxing Corporate Income in the 21st Century*. Cambridge, UK: Cambridge University Press.
- McKenna, F. 2014. <http://retheauditors.com/2014/04/19/us-department-of-justice-v-kpmg-document-shows-too-few-to-fail-was-opening-premise/>
- Lisic, L., L. Myers, R. Pawlewicz, and T. Seidel. 2015. Do accounting firm consulting revenues affect audit quality? Evidence from the post-SOX era. SSRN.com
- Novack, J., and L. Saunders. 1998. The hustling of X-rated tax shelters. *Forbes* (December 14): 198-208.
- Petersen, M., Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22.1 (2009): 435-480.
- Resnick, P., R. Zeckhauser, J. Swanson and K. Lockwood. 2006. The value of reputation on eBay: A controlled experiment. *Experimental Economics* 9(2): 79-101.
- Reynolds, J., Deis, Jr. D., and J. Francis. 2004. Professional Service Fees and Auditor Objectivity. *Auditing: A Journal of Practice & Theory* 23 (1): 29-52.
- Robinson, J., S. Sikes, and C. Weaver. 2010. Performance measurement of corporate tax departments. *The Accounting Review* 85(3): 1035-1064.
- Rostain, T. 2006. Travails in tax: KPMG and the tax shelter controversy. In: Rhode D., and D. Luban. *Legal Ethics* New York, NY: Foundation Press.
- Raghunandan, K., and D. Rama 2006. SOX Section 404 Material Weakness Disclosures and Audit Fees. *Auditing: A Journal of Practice & Theory* 25(1): 99-114.
- Scholes, M., and M. Wolfson. 1992. *Taxes and Business Strategy: A Planning Approach*. Engelwood Cliffs, NJ: Prentice-Hall, Inc.
- Sims, T., and E. Sunley. 1992. Book review: Taxes and business strategy. *National Tax Journal* 45(4): 451-455.
- Skinner, D. J., and S. Srinivasan. 2012. Audit quality and auditor reputation: Evidence from Japan. *The Accounting Review* 87 (5):1737-1765.
- Venkataraman, R., J. Weber, and M. Willenborg. 2008. Litigation risk, audit quality, and audit fees: Evidence from initial public offerings. *The Accounting Review* 83(5): 1315-1345.
- Weber, J., M. Willenborg, and J. Zhang. 2008. Does auditor reputation matter? The case of KPMG Germany and ComROAD AG. *Journal of Accounting Research* 46 (4):941-972.

Wilson, Ryan J. 2009. An examination of corporate tax shelter participants. *The Accounting Review* 84 (3): 969-999.

Appendix A: Variable Definitions

Description and calculation of regression variables. Compustat/Audit Analytics variables in all caps.

| Variable | Description | Calculation |
|---|---|---|
| Indicator and Interaction Variables | | |
| KPMG | Equals 1 if KPMG is current auditor, otherwise 0 | |
| Prob | Equals 1 if observation is from 2006-2009, otherwise 0 | |
| Post | Equals 1 if observation is from 2010-2012, otherwise 0 | |
| KPMG*Prob | Interaction of KPMG and Prob | KPMG * Prob |
| KPMG*Post | Interaction of KPMG and Post | KPMG * Post |
| 2006 | Equals 1 if observation is from 2006, otherwise 0 | |
| 2007 | Equals 1 if observation is from 2007, otherwise 0 | |
| 2008 | Equals 1 if observation is from 2008, otherwise 0 | |
| 2009 | Equals 1 if observation is from 2009, otherwise 0 | |
| 2010 | Equals 1 if observation is from 2010, otherwise 0 | |
| 2011 | Equals 1 if observation is from 2011, otherwise 0 | |
| 2012 | Equals 1 if observation is from 2012, otherwise 0 | |
| 2013 | Equals 1 if observation is from 2013, otherwise 0 | |
| 2014 | Equals 1 if observation is from 2014, otherwise 0 | |
| Tax Fees & Tax Avoidance Regressions | | |
| Tax Fees | Natural log of 1 + Tax Fees from Audit Analytics | $\log(1+\text{TAX_FEES})$ |
| GAAP ETR | GAAP ETR | $\text{TXT} / (\text{PI} - \text{SPI})$ |
| 3 Year GAAP ETR | GAAP ETR using the components summed over years t-1, t, and t+1 | |
| Cash ETR | Cash ETR - Dyreng, Hanlon, and Maydew (2008) | $\text{TXPD} / (\text{PI} - \text{SPI})$ |
| 3 Year Cash ETR | Cash ETR using the components summed over years t-1, t, and t+1 | |
| ROA | Return on Assets | PI / AT |
| FLR Abn Accruals | Frank, Lynch, and Rego (2009) Pretax Performance Matched Discretionary Accruals | |
| Size | Natural log of Total Assets | $\ln(\text{AT})$ |
| FI | Foreign Pretax Income | PIFO / AT |
| Eq Inc | Equity Income | ESUB / AT |
| Intang | Intangible Assets | INTAN / AT |
| PPE | Property Plant and Equipment | PPENT / AT |
| NOL | Equals 1 if Tax Loss Carry Forward (TLCF) > 0, otherwise 0 | |
| ΔNOL | Change in Tax Loss Carry Forward | $\text{change}(\text{TLCF}) / \text{AT}$ |
| MTB | Market to Book Ratio | $(\text{PRCC_F} * \text{CSHO}) / \text{CEQ}$ |
| Lev | Leverage | DLTT / AT |
| FCF | Free Cash Flows | $(\text{OANCF} - \text{CAPX}) / \text{AT}$ |
| R&D | Research and Development | XRD / AT |

Appendix A Cont'd: Variable Definitions

Description and calculation of regression variables. Compustat/Audit Analytics variables in all caps.

| Variable | Description | Calculation |
|----------------------------------|---|--|
| Audit Quality Regressions | | |
| Abn Accruals | The residual from the Jones (1991) discretionary accruals model estimated for each year and 2 digit industry code | |
| Abs Abn Accruals | The absolute value of Abn Accruals | |
| KPM Abn Accruals | The difference in Abn Accruals between two firms matched on year, 2 digit SIC code, and net income scaled by total assets (Kothari et al. 2005) | |
| Size | Natural log of Total Assets | $\ln(AT)$ |
| Lev | Leverage | $DLTT / AT$ |
| Loss | Equals 1 if Pretax income (PI) is less than 0, and 0 otherwise | |
| Sales Growth | Percentage change in | $(REVT - \text{lag}(REVT)) / \text{lag}(REVT)$ |
| CFO | Operating Cash Flows | $OANCF / AT$ |
| MTB | Market to Book Ratio | $(PRCC_F * CSHO) / CEQ$ |
| Total Accruals | Total Accruals | $((IBC + TXT) - ((OANCF+TXPD)-XIDO))$ |
| Ext Financing | External Financing | $((SSTK - PRSTKC - DV) + (DLTIS - DLTR - \text{change_DLCCH})) / \text{lead}(AT)$ |
| Sales Volatility | Standard deviation of Sales (REVT/AT) from years t, t-1, and t-2 | |
| Audit Fee Regressions | | |
| Audit Fees | Natural log of 1 + Audit Fees from Audit Analytics | $\log(1+AUDIT_FEES)$ |
| Size | Natural log of Total Assets | $\ln(AT)$ |
| CATA | Total Current Assets | ACT / AT |
| Foreign | Foreign Pretax Income | $PIFO / AT$ |
| Quick | Quick Ratio | ACT / LCT |
| Lev | Leverage | $DLTT / AT$ |
| ROA | Return on Assets | PI / AT |
| Loss | Equals 1 if Pretax income (PI) is less than 0, and 0 otherwise | |
| GC | Equals 1 if the firm's auditor issues of going concern opinion in the current year, and 0 otherwise | |
| Dec YE | Equals 1 if the firm's fiscal year end is in Decemeber, and 0 otherwise | |

Appendix A Cont'd: Variable Definitions

| Description and calculation of regression variables. Compustat/Audit Analytics variables in all caps. | | |
|---|--|--|
| Variable | Description | Calculation |
| <i>Auditor Switching Risk Regressions</i> | | |
| Switch | Equals 1 if the firm's current auditor is different than the previous year's auditor, and 0 otherwise. Calculated before removing non-Big 4 firms from the sample to capture switches to and from non-Big 4 auditors | |
| Abn Accruals | The residual from the Jones (1991) discretionary accruals model estimated for each year and 2 digit industry code | |
| Short | Equals 1 if the auditor has less than 4 years of experience with the current client, and 0 otherwise. | |
| Growth | Percentage change in Total Assets | $(AT - \text{lag}(AT)) / \text{lag}(AT)$ |
| Inv Rec | Inventory and Receivables | $(INVT + RECT) / AT$ |
| GC | Equals 1 if the firm's auditor issues of going concern opinion in the current year, and 0 otherwise | |
| ROA | Return on Assets | PI / AT |
| Loss | Equals 1 if Pretax income (PI) is less than 0, and 0 otherwise | |
| Lev | Leverage | $DLTT / AT$ |
| Δ Lev | Change in Leverage | $\text{Lev} - \text{lag}(\text{Lev})$ |
| Cash | Cash | CHE / AT |
| Size | Natural log of Total Assets | $\ln(AT)$ |
| Δ Size | Change in Size | $\text{Size} - \text{lag}(\text{Size})$ |
| M&A | Equals 1 if the firm was an acquirer or target of a merger in the current year, and 0 otherwise | |
| Abn Audit Fee | The residual from the estimation of the model in column (1) of Table 6 without the KPMG, Prob, or KPMG*Prob variables | |

Table 1: Descriptive Statistics and Tests of Mean Differences

Panel A: Descriptive Statistics for Regression Variables

| | <i>Variable</i> | <i>N</i> | <i>Mean</i> | <i>Min</i> | <i>P 25</i> | <i>P 50</i> | <i>P 75</i> | <i>Max</i> | <i>SD</i> |
|-------------------|------------------|----------|-------------|------------|-------------|-------------|-------------|------------|-----------|
| | KPMG | 12517 | 0.204 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.403 |
| | Prob | 12517 | 0.571 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 0.495 |
| Tax Variables | Tax Fees | 11440 | 7.412 | 0.000 | 0.000 | 10.571 | 12.415 | 15.819 | 5.963 |
| | GAAP ETR | 12517 | 0.321 | 0.000 | 0.238 | 0.335 | 0.383 | 1.000 | 0.171 |
| | 3yr GAAP ETR | 7974 | 0.318 | 0.000 | 0.271 | 0.335 | 0.375 | 0.704 | 0.099 |
| | Cash ETR | 12517 | 0.267 | 0.000 | 0.114 | 0.244 | 0.356 | 1.000 | 0.211 |
| | 3yr Cash ETR | 7974 | 0.265 | 0.000 | 0.183 | 0.269 | 0.344 | 0.759 | 0.128 |
| | BTD | 8454 | 0.021 | -0.372 | -0.003 | 0.018 | 0.043 | 0.308 | 0.059 |
| Audit Variables | Audit Fees | 11440 | 13.658 | 0.000 | 12.728 | 13.728 | 14.577 | 17.154 | 1.465 |
| | Switch | 10361 | 0.080 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.272 |
| | Abn Accruals | 10064 | 0.000 | -0.284 | -0.031 | 0.001 | 0.032 | 0.286 | 0.064 |
| | Abs Abn Accruals | 10064 | 0.046 | 0.000 | 0.014 | 0.032 | 0.060 | 0.337 | 0.048 |
| | KPM Abn Accruals | 10064 | -0.002 | -0.329 | -0.048 | -0.001 | 0.046 | 0.341 | 0.086 |
| Control Variables | ROA | 12517 | 0.100 | -0.298 | 0.044 | 0.084 | 0.140 | 0.449 | 0.087 |
| | FLR Abn Accruals | 9596 | -0.003 | -0.344 | -0.033 | 0.000 | 0.030 | 0.310 | 0.068 |
| | Size | 12517 | 6.731 | 1.923 | 5.483 | 6.637 | 7.866 | 11.742 | 1.817 |
| | ΔSize | 12354 | 0.124 | -0.496 | -0.004 | 0.071 | 0.183 | 1.727 | 0.249 |
| | For Inc | 12517 | 0.017 | -0.075 | 0.000 | 0.000 | 0.021 | 0.195 | 0.035 |
| | Eq Inc | 12517 | 0.001 | -0.011 | 0.000 | 0.000 | 0.000 | 0.034 | 0.004 |
| | Intang | 12517 | 0.175 | 0.000 | 0.012 | 0.103 | 0.285 | 0.768 | 0.193 |
| | PPE | 12517 | 0.277 | 0.006 | 0.097 | 0.206 | 0.400 | 0.913 | 0.230 |
| | NOL | 12517 | 0.380 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 | 0.485 |
| | ΔNOL | 7884 | -0.001 | -0.324 | -0.001 | 0.000 | 0.001 | 0.264 | 0.048 |
| | MTB | 11234 | 3.187 | -11.860 | 1.398 | 2.277 | 3.845 | 32.196 | 3.830 |
| | CATA | 12212 | 0.466 | 0.048 | 0.289 | 0.459 | 0.639 | 0.950 | 0.227 |
| | Foreign | 12517 | 0.205 | -2.459 | 0.000 | 0.000 | 0.288 | 3.539 | 0.505 |
| | Quick | 12211 | 2.471 | 0.354 | 1.324 | 1.920 | 2.930 | 14.203 | 1.915 |
| | Lev | 12517 | 0.194 | 0.000 | 0.008 | 0.152 | 0.299 | 0.989 | 0.201 |
| | Δlev | 12311 | 0.000 | -0.006 | 0.000 | 0.000 | 0.000 | 0.004 | 0.001 |
| | FCF | 12517 | 0.059 | -0.253 | 0.013 | 0.057 | 0.104 | 0.377 | 0.086 |
| | R&D | 12517 | 0.026 | 0.000 | 0.000 | 0.000 | 0.031 | 0.239 | 0.046 |
| | CFO | 12517 | 0.117 | -0.164 | 0.066 | 0.108 | 0.160 | 0.450 | 0.082 |
| | Tobin's Q | 11600 | 1.991 | 0.337 | 1.159 | 1.547 | 2.241 | 203.519 | 2.432 |
| | Loss | 12517 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.198 |
| | Dec YE | 12517 | 0.654 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 | 0.476 |
| | Sales Growth | 12335 | 0.141 | -0.521 | -0.004 | 0.084 | 0.208 | 2.300 | 0.290 |
| | Total Accruals | 12499 | -0.048 | -0.531 | -0.082 | -0.045 | -0.011 | 0.319 | 0.078 |
| | Ext Financing | 5361 | -0.010 | -0.468 | -0.067 | -0.013 | 0.024 | 0.673 | 0.132 |
| | Sales Vol | 10202 | 0.123 | 0.000 | 0.036 | 0.075 | 0.147 | 5.188 | 0.176 |
| | Short | 12517 | 0.475 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 | 0.499 |
| | Growth | 12354 | 0.176 | -0.391 | -0.004 | 0.074 | 0.201 | 4.625 | 0.425 |
| | Inv Rec | 12363 | 0.275 | 0.011 | 0.130 | 0.250 | 0.381 | 0.834 | 0.180 |
| | GC | 12441 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.070 |
| | Cash | 12516 | 0.155 | 0.000 | 0.026 | 0.082 | 0.224 | 0.780 | 0.177 |
| | M&A | 12517 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.161 |
| Abn Audit Fee | 11210 | 0.018 | -3.755 | -0.244 | 0.000 | 0.299 | 2.117 | 0.553 | |

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Table 1: Descriptive Statistics and Tests of Mean Differences

Panel B: Tests of Mean Differences for Pre Versus Probation Periods

| Tax Fees (Raw) | | | | | Audit Fees (Raw) | | | | |
|--------------------|------------|-------------|---------------|--------------|--------------------|------------|-------------|---------------|--------------|
| | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> | | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> |
| KPMG | 269,136 | 267,051 | -0.04 | 0.399 | KPMG | 762,971 | 3,247,785 | 12.61 | 0.000 |
| Other Big 4 | 324,069 | 415,969 | 3.46 | 0.001 | Other Big 4 | 805,718 | 3,014,642 | 30.88 | 0.000 |
| T Stat | 1.04 | 6.28 | | | T Stat | 0.55 | -1.20 | | |
| P Val | 0.232 | 0.000 | | | P Val | 0.343 | 0.195 | | |
| GAAP ETR | | | | | 3 Year GAAP ETR | | | | |
| | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> | | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> |
| KPMG | 0.340 | 0.319 | -2.89 | 0.006 | KPMG | 0.336 | 0.314 | -4.63 | 0.000 |
| Other Big 4 | 0.338 | 0.305 | -9.70 | 0.000 | Other Big 4 | 0.338 | 0.303 | -14.35 | 0.000 |
| T Stat | -0.35 | -2.95 | | | T Stat | 0.38 | -3.28 | | |
| P Val | 0.375 | 0.005 | | | P Val | 0.371 | 0.002 | | |
| Cash ETR | | | | | 3 Year Cash ETR | | | | |
| | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> | | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> |
| KPMG | 0.246 | 0.263 | 2.05 | 0.05 | KPMG | 0.245 | 0.262 | 2.73 | 0.010 |
| Other Big 4 | 0.273 | 0.268 | -1.06 | 0.23 | Other Big 4 | 0.272 | 0.265 | -2.14 | 0.040 |
| T Stat | 3.61 | 0.93 | | | T Stat | 4.82 | 0.64 | | |
| P Val | 0.001 | 0.258 | | | P Val | 0.000 | 0.324 | | |
| BTD | | | | | Abn Accruals | | | | |
| | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> | | <i>Pre</i> | <i>Prob</i> | <i>T Stat</i> | <i>P Val</i> |
| KPMG | 0.027 | 0.022 | -1.47 | 0.136 | KPMG | -0.003 | 0.001 | 1.37 | 0.155 |
| Other Big 4 | 0.022 | 0.019 | -1.78 | 0.082 | Other Big 4 | 0.001 | -0.001 | -0.87 | 0.273 |
| T Stat | -1.97 | -1.40 | | | T Stat | 1.42 | -0.79 | | |
| P Val | 0.057 | 0.149 | | | P Val | 0.145 | 0.292 | | |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tax Avoidance Measures use the Audit and Tax Client (AT) sample. Other measures use the Audit Client (AC) sample.

Table 2: Correlations

Pearson Correlations for Dependent and Select Control Variables

| # | Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | |
|----|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| 1 | KPMG | 1.00 | | | | | | | | | | | | | | | | | |
| 2 | Prob | 0.01 | 1.00 | | | | | | | | | | | | | | | | |
| 3 | Tax Fees | -0.04* | 0.38* | 1.00 | | | | | | | | | | | | | | | |
| 4 | GAAP ETR | 0.02 | -0.09* | -0.06* | 1.00 | | | | | | | | | | | | | | |
| 5 | 3 Year GAAP ETR | 0.02 | -0.16* | -0.12* | 0.77* | 1.00 | | | | | | | | | | | | | |
| 6 | Cash ETR | -0.03* | -0.00 | 0.01 | 0.42* | 0.40* | 1.00 | | | | | | | | | | | | |
| 7 | 3 Year Cash ETR | -0.04* | -0.01 | -0.02 | 0.41* | 0.52* | 0.76* | 1.00 | | | | | | | | | | | |
| 8 | BTD | 0.03 | -0.02 | -0.02 | -0.21* | -0.27* | -0.41* | -0.45* | 1.00 | | | | | | | | | | |
| 9 | Audit Fees | -0.02 | 0.53* | 0.43* | -0.05* | -0.20* | 0.03* | -0.04* | -0.06* | 1.00 | | | | | | | | | |
| 10 | Switch | 0.02 | -0.20* | -0.12* | 0.01 | 0.02 | -0.04* | -0.02 | 0.01 | -0.19* | 1.00 | | | | | | | | |
| 11 | Abn Accruals | -0.00 | -0.00 | 0.00 | -0.03* | -0.01 | 0.06* | 0.08* | 0.21* | -0.00 | -0.02 | 1.00 | | | | | | | |
| 12 | Abs Abn Accruals | -0.01 | -0.06* | -0.07* | 0.06* | 0.01 | 0.04* | 0.01 | -0.12* | -0.10* | 0.01 | -0.05* | 1.00 | | | | | | |
| 13 | KPM Abn Accruals | -0.01 | 0.01 | 0.01 | -0.01 | -0.01 | 0.06* | 0.05* | 0.06* | 0.01 | -0.02 | 0.68* | 0.02 | 1.00 | | | | | |
| 14 | ROA | 0.00 | 0.02 | -0.03* | 0.01 | 0.06* | -0.07* | 0.05* | 0.42* | -0.05* | -0.05* | 0.14* | 0.01 | -0.00 | 1.00 | | | | |
| 15 | Size | -0.02 | 0.26* | 0.32* | -0.04* | -0.13* | -0.01 | -0.08* | -0.01 | 0.72* | -0.09* | 0.00 | -0.16* | 0.01 | -0.05* | 1.00 | | | |
| 16 | For Inc | 0.00 | 0.12* | 0.17* | -0.10* | -0.20* | -0.05* | -0.06* | 0.12* | 0.28* | -0.05* | 0.04* | -0.04* | 0.00 | 0.22* | 0.20* | 1.00 | | |
| 17 | Eq Inc | 0.01 | 0.06* | 0.05* | -0.03* | -0.03* | -0.01 | 0.01 | 0.03* | 0.12* | -0.01 | 0.06* | -0.01 | 0.05* | 0.06* | 0.14* | 0.06* | 1.00 | |
| 18 | Intang | -0.02 | 0.18* | 0.15* | 0.05* | 0.00 | 0.05* | 0.02 | -0.10* | 0.23* | -0.03* | -0.06* | -0.09* | -0.03* | -0.18* | 0.18* | 0.00 | -0.04* | |
| 19 | PPE | 0.04* | -0.06* | -0.07* | -0.03* | -0.00 | -0.09* | -0.12* | 0.14* | -0.07* | 0.03* | 0.01 | -0.12* | 0.01 | -0.02* | 0.17* | -0.10* | 0.05* | |
| 20 | NOL | -0.02* | 0.19* | 0.13* | -0.02 | -0.08* | -0.06* | -0.09* | -0.01 | 0.20* | -0.01 | -0.03* | -0.00 | -0.01 | -0.13* | 0.11* | 0.11* | -0.00 | |
| 21 | MTB | -0.01 | 0.01 | 0.02 | -0.03* | -0.05* | -0.07* | -0.07* | 0.06* | 0.06* | -0.03* | -0.05* | 0.06* | -0.05* | 0.29* | 0.09* | 0.14* | 0.02 | |
| 22 | Lev | -0.01 | -0.02* | 0.03* | 0.04* | 0.04* | -0.01 | -0.06* | -0.01 | 0.10* | 0.01 | -0.02 | -0.08* | -0.00 | -0.22* | 0.19* | -0.09* | 0.01 | |
| 23 | FCF | -0.01 | 0.06* | 0.07* | -0.07* | -0.07* | -0.07* | -0.01 | 0.09* | 0.04* | -0.01 | -0.44* | -0.04* | -0.37* | 0.42* | -0.02* | 0.15* | -0.01 | |
| 23 | R&D | -0.01 | 0.02 | 0.03* | -0.10* | -0.19* | -0.09* | -0.13* | -0.02 | 0.00 | -0.02 | -0.11* | 0.14* | -0.07* | 0.03* | -0.16* | 0.15* | -0.06* | |
| 25 | CFO | 0.02 | 0.05* | 0.00 | -0.07* | -0.05* | -0.13* | -0.09* | 0.22* | -0.02* | -0.01 | -0.50* | -0.02 | -0.42* | 0.55* | -0.01 | 0.12* | 0.00 | |
| 26 | Tobin's Q | -0.00 | -0.01 | -0.01 | -0.03* | -0.02 | -0.07* | -0.05* | 0.06* | -0.01 | -0.03* | -0.04* | 0.08* | -0.05* | 0.28* | -0.01 | 0.10* | -0.01 | |
| 27 | Loss | -0.01 | 0.04* | 0.04* | 0.08* | -0.02 | 0.12* | 0.02 | -0.38* | 0.05* | 0.02 | -0.25* | 0.21* | -0.05* | -0.37* | -0.01 | -0.09* | -0.01 | |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

* denotes significance at the 1% level.

Pearson Correlations for Dependent and Select Control Variables Continued

| # | Variable | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|----|------------------|--------|--------|--------|--------|--------|--------|-------|--------|--------|------|
| 1 | KPMG | | | | | | | | | | |
| 2 | Prob | | | | | | | | | | |
| 3 | Tax Fees | | | | | | | | | | |
| 4 | GAAP ETR | | | | | | | | | | |
| 5 | 3 Year GAAP ETR | | | | | | | | | | |
| 6 | Cash ETR | | | | | | | | | | |
| 7 | 3 Year Cash ETR | | | | | | | | | | |
| 8 | BTD | | | | | | | | | | |
| 9 | Audit Fees | | | | | | | | | | |
| 10 | Switch | | | | | | | | | | |
| 11 | Abn Accruals | | | | | | | | | | |
| 12 | Abs Abn Accruals | | | | | | | | | | |
| 13 | KPM Abn Accruals | | | | | | | | | | |
| 14 | ROA | | | | | | | | | | |
| 15 | Size | | | | | | | | | | |
| 16 | For Inc | | | | | | | | | | |
| 17 | Eq Inc | | | | | | | | | | |
| 18 | Intang | 1.00 | | | | | | | | | |
| 19 | PPE | -0.38* | 1.00 | | | | | | | | |
| 20 | NOL | 0.15* | -0.11* | 1.00 | | | | | | | |
| 21 | MTB | -0.04* | -0.08* | 0.00 | 1.00 | | | | | | |
| 22 | Lev | 0.24* | 0.24* | 0.04* | -0.09* | 1.00 | | | | | |
| 23 | FCF | 0.09* | -0.28* | -0.03* | 0.17* | -0.15* | 1.00 | | | | |
| 23 | R&D | -0.06* | -0.32* | 0.10* | 0.17* | -0.25* | 0.16* | 1.00 | | | |
| 25 | CFO | -0.14* | 0.17* | -0.08* | 0.22* | -0.11* | 0.76* | 0.06* | 1.00 | | |
| 26 | Tobin's Q | -0.06* | -0.08* | -0.03* | 0.29* | -0.09* | 0.18* | 0.15* | 0.22* | 1.00 | |
| 27 | Loss | 0.06* | -0.05* | 0.07* | -0.04* | 0.05* | -0.06* | 0.10* | -0.10* | -0.03* | 1.00 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

* denotes significance at the 1% level (two-tailed test).

Table 3: Regression Results – Dependent Variable: Tax Fees

| | (1) | | (2) | |
|--------------------|--------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | 0.391 | (1.14) | 0.395 | (1.16) |
| Prob | 4.150 | (18.31)*** | | |
| KPMG*Prob | -1.735 | (-3.71)*** | | |
| 2006 | | | 4.503 | (18.60)*** |
| 2007 | | | 4.137 | (16.10)*** |
| 2008 | | | 3.948 | (15.37)*** |
| 2009 | | | 3.948 | (14.77)*** |
| KPMG*2006 | | | -1.320 | (-2.60)*** |
| KPMG*2007 | | | -1.825 | (-3.39)*** |
| KPMG*2008 | | | -1.794 | (-3.24)*** |
| KPMG*2009 | | | -2.154 | (-3.55)*** |
| ROA | -3.322 | (-2.66)*** | -3.835 | (-3.00)*** |
| FLR Abn Accruals | 3.279 | (2.25)** | 3.711 | (2.51)** |
| Size | 0.779 | (12.20)*** | 0.780 | (12.20)*** |
| FI | 11.039 | (3.85)*** | 11.220 | (3.92)*** |
| Eq Inc | 7.279 | (0.27) | 4.331 | (0.16) |
| Intang | 0.617 | (0.96) | 0.591 | (0.92) |
| PPE | -1.356 | (-2.36)** | -1.300 | (-2.26)** |
| NOL | 0.875 | (4.19)*** | 0.881 | (4.22)*** |
| ΔNOL | 0.814 | (0.47) | 0.950 | (0.55) |
| MTB | -0.007 | (-0.32) | -0.009 | (-0.40) |
| Lev | -0.355 | (-0.59) | -0.354 | (-0.59) |
| FCF | 5.731 | (4.16)*** | 6.449 | (4.49)*** |
| R&D | 1.908 | (0.84) | 1.823 | (0.80) |
| Intercept | -0.761 | (-1.71)* | -0.762 | (-1.71)* |
| Observations | | 5466 | | 5466 |
| Adjusted R-squared | | 0.250 | | 0.251 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit Client (AC) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 4: Regression Results – Dependent Variable: Tax Avoidance

Panel A: Regression Results for Equation (1)

| | (1) GAAP ETR | | (2) 3 Year GAAP ETR | | (3) Cash ETR | | (4) 3 Year Cash ETR | | (5) BTD | |
|--------------------|-----------------|---------------|------------------------|---------------|-----------------|---------------|------------------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | 0.003 | (0.22) | -0.013 | (-1.62) | -0.047 | (-2.70)*** | -0.052 | (-4.45)*** | 0.014 | (3.22)*** |
| Prob | -0.028 | (-4.19)*** | -0.028 | (-5.32)*** | 0.013 | (1.34) | 0.007 | (0.91) | -0.008 | (-3.15)*** |
| KPMG*Prob | 0.014 | (0.96) | 0.024 | (2.44)** | 0.041 | (2.09)** | 0.044 | (3.25)*** | -0.012 | (-2.07)** |
| ROA | 0.358 | (6.03)*** | 0.273 | (6.92)*** | 0.043 | (0.61) | 0.196 | (4.04)*** | 0.271 | (9.20)*** |
| FLR Abn Accruals | -0.163 | (-2.21)** | -0.102 | (-1.99)** | -0.326 | (-3.69)*** | -0.127 | (-2.01)** | 0.221 | (5.26)*** |
| Size | -0.005 | (-2.39)** | -0.006 | (-3.47)*** | -0.002 | (-0.69) | -0.002 | (-0.90) | 0.000 | (0.08) |
| FI | -0.634 | (-6.10)*** | -0.534 | (-6.28)*** | -0.298 | (-2.58)** | -0.201 | (-1.98)** | 0.152 | (2.37)** |
| Eq Inc | -2.368 | (-2.75)*** | -0.652 | (-0.71) | -1.693 | (-1.80)* | 0.284 | (0.30) | 0.354 | (0.94) |
| Intang | 0.009 | (0.46) | 0.005 | (0.32) | -0.066 | (-2.82)*** | -0.018 | (-0.93) | 0.018 | (2.68)*** |
| PPE | -0.043 | (-2.18)** | -0.018 | (-1.06) | -0.138 | (-5.40)*** | -0.079 | (-3.76)*** | 0.047 | (6.86)*** |
| NOL | 0.003 | (0.54) | -0.001 | (-0.22) | -0.033 | (-3.84)*** | -0.029 | (-4.09)*** | 0.012 | (4.54)*** |
| ΔNOL | 0.013 | (0.17) | 0.018 | (0.32) | 0.493 | (5.04)*** | 0.417 | (4.96)*** | -0.113 | (-2.62)*** |
| MTB | -0.002 | (-2.41)** | -0.001 | (-2.45)** | -0.001 | (-1.11) | -0.002 | (-2.65)*** | -0.001 | (-2.78)*** |
| Lev | 0.018 | (0.86) | 0.008 | (0.45) | -0.061 | (-2.37)** | -0.060 | (-2.78)*** | 0.011 | (1.32) |
| FCF | -0.244 | (-3.78)*** | -0.157 | (-3.28)*** | -0.333 | (-4.05)*** | -0.117 | (-1.98)** | 0.025 | (0.77) |
| R&D | -0.315 | (-3.90)*** | -0.369 | (-6.26)*** | -0.473 | (-4.86)*** | -0.489 | (-5.84)*** | 0.062 | (1.60) |
| Intercept | 0.381 | (23.99)*** | 0.387 | (30.65)*** | 0.407 | (19.31)*** | 0.342 | (20.32)*** | -0.032 | (-5.08)*** |
| Observations | 3371 | | 2783 | | 3371 | | 2783 | | 2864 | |
| Adjusted R-squared | 0.086 | | 0.165 | | 0.072 | | 0.113 | | 0.288 | |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit and Tax Client (AT) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 4: Regression Results – Dependent Variable: Tax Avoidance

Panel B: Regression Results for Equation (2)

| | (1) GAAP ETR | | (2) 3yr GAAP ETR | | (3) Cash ETR | | (4) 3yr Cash ETR | | (5) BTD | |
|--------------------|-----------------|---------------|---------------------|---------------|-----------------|---------------|---------------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | 0.003 | (0.21) | -0.013 | (-1.62) | -0.047 | (-2.70)*** | -0.013 | (-1.62) | 0.014 | (3.19)*** |
| 2006 | -0.032 | (-4.47)*** | -0.024 | (-4.34)*** | -0.001 | (-0.10) | -0.024 | (-4.34)*** | -0.008 | (-2.73)*** |
| 2007 | -0.030 | (-3.84)*** | -0.031 | (-5.26)*** | 0.013 | (1.12) | -0.031 | (-5.26)*** | -0.010 | (-3.24)*** |
| 2008 | -0.030 | (-3.66)*** | -0.026 | (-4.33)*** | 0.027 | (2.38)** | -0.026 | (-4.33)*** | -0.012 | (-3.59)*** |
| 2009 | -0.019 | (-1.99)** | -0.029 | (-4.51)*** | 0.013 | (1.10) | -0.029 | (-4.51)*** | -0.002 | (-0.47) |
| KPMG*2006 | 0.021 | (1.15) | 0.028 | (2.42)** | 0.057 | (2.45)** | 0.028 | (2.42)** | -0.012 | (-1.85)* |
| KPMG*2007 | 0.006 | (0.36) | 0.032 | (2.76)*** | 0.027 | (1.17) | 0.032 | (2.76)*** | -0.008 | (-1.32) |
| KPMG*2008 | 0.030 | (1.31) | 0.016 | (1.38) | 0.049 | (1.94)* | 0.016 | (1.38) | -0.016 | (-1.80)* |
| KPMG*2009 | -0.004 | (-0.19) | 0.017 | (1.40) | 0.026 | (1.09) | 0.017 | (1.40) | -0.009 | (-1.19) |
| Controls | | Y | | Y | | Y | | Y | | Y |
| Intercept | 0.382 | (23.94)*** | 0.387 | (30.57)*** | 0.408 | (19.32)*** | 0.387 | (30.57)*** | -0.031 | (-4.95)*** |
| Observations | 3371 | | 2783 | | 3371 | | 2783 | | 2864 | |
| Adjusted R-squared | 0.086 | | 0.165 | | 0.073 | | 0.165 | | 0.291 | |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit and Tax Client (AT) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 5: Regression Results – Dependent Variable: Tax Avoidance

Panel A: Regression Results for Equation (4) Partitioning Sample on Below/Above Median Tax Fees

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|--------------------|-----------|------------|-----------------|------------|----------|-----------|-----------------|------------|-----------|-----------|
| | GAAP ETR | | 3 Year GAAP ETR | | Cash ETR | | 3 Year Cash ETR | | BTD | |
| | Below | Above | Below | Above | Below | Above | Below | Above | Below | Above |
| KPMG | -0.019 | 0.019 | -0.025 | -0.005 | -0.049 | -0.046 | -0.057 | -0.051 | 0.013 | 0.012 |
| | (-1.31) | (0.92) | (-1.85)* | (-0.51) | (-1.90)* | (-1.97)** | (-3.10)*** | (-3.71)*** | (1.97)** | (2.30)** |
| Prob | -0.024 | -0.037 | -0.028 | -0.032 | 0.014 | 0.009 | -0.004 | 0.012 | -0.009 | -0.007 |
| | (-2.28)** | (-4.09)*** | (-3.55)*** | (-4.42)*** | (0.87) | (0.71) | (-0.34) | (1.20) | (-2.06)** | (-2.19)** |
| KPMG*Prob | 0.042 | -0.014 | 0.037 | 0.010 | 0.057 | 0.021 | 0.057 | 0.032 | -0.019 | 0.001 |
| | (2.40)** | (-0.61) | (2.38)** | (0.84) | (1.96)** | (0.74) | (2.74)*** | (1.76)* | (-2.35)** | (0.11) |
| Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Observations | 1660 | 1711 | 1329 | 1454 | 1660 | 1711 | 1329 | 1454 | 1412 | 1452 |
| Adjusted R-squared | 0.069 | 0.104 | 0.122 | 0.184 | 0.081 | 0.060 | 0.109 | 0.111 | 0.229 | 0.374 |

Panel B: Regression Results for Equation (4) Partitioning Sample on Below/Above Non Audit Fees

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|--------------------|-----------|------------|-----------------|------------|----------|-----------|-----------------|------------|------------|-----------|
| | GAAP ETR | | 3 Year GAAP ETR | | Cash ETR | | 3 Year Cash ETR | | BTD | |
| | Below | Above | Below | Above | Below | Above | Below | Above | Below | Above |
| KPMG | -0.014 | 0.020 | -0.022 | -0.004 | -0.044 | -0.050 | -0.055 | -0.054 | 0.012 | 0.013 |
| | (-0.90) | (0.99) | (-1.82)* | (-0.42) | (-1.80)* | (-2.01)** | (-3.15)*** | (-3.77)*** | (1.76)* | (2.59)*** |
| Prob | -0.027 | -0.036 | -0.030 | -0.032 | 0.019 | 0.004 | -0.003 | 0.007 | -0.011 | -0.006 |
| | (-2.45)** | (-3.93)*** | (-3.79)*** | (-4.51)*** | (1.14) | (0.35) | (-0.23) | (0.70) | (-2.67)*** | (-1.85)* |
| KPMG*Prob | 0.033 | -0.012 | 0.035 | 0.008 | 0.035 | 0.043 | 0.045 | 0.045 | -0.014 | -0.003 |
| | (1.73)* | (-0.52) | (2.35)** | (0.65) | (1.25) | (1.50) | (2.25)** | (2.45)** | (-1.72)* | (-0.42) |
| Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Observations | 1677 | 1694 | 1338 | 1445 | 1677 | 1694 | 1338 | 1445 | 1446 | 1418 |
| Adjusted R-squared | 0.076 | 0.095 | 0.128 | 0.177 | 0.093 | 0.046 | 0.114 | 0.099 | 0.254 | 0.348 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit and Tax Client (AT) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

T statistics are below coefficient estimates in parentheses.

Table 6: Regression Results – Dependent Variable: Financial Reporting Quality

| | (1) | | (2) | | (3) | |
|--------------------------|--------------|---------------|------------------|---------------|------------------|---------------|
| | Abn Accruals | | Abs Abn Accruals | | KPM Abn Accruals | |
| | Coeff | T Stat | Coeff | T Stat | Coeff | T Stat |
| KPMG | -0.003 | (-0.86) | 0.003 | (0.64) | -0.008 | (-1.20) |
| Prob | -0.005 | (-2.48)** | -0.002 | (-0.70) | -0.003 | (-0.65) |
| KPMG*Prob | 0.003 | (0.63) | -0.004 | (-0.67) | 0.006 | (0.73) |
| Size | 0.001 | (1.22) | -0.002 | (-4.36)*** | 0.000 | (0.37) |
| Lev | 0.006 | (0.91) | -0.019 | (-3.10)*** | -0.004 | (-0.36) |
| Loss | -0.018 | (-3.10)*** | 0.060 | (7.27)*** | 0.024 | (2.19)** |
| Sales Growth | -0.036 | (-6.90)*** | 0.016 | (2.38)** | -0.032 | (-4.01)*** |
| CFO | -0.131 | (-7.56)*** | -0.004 | (-0.21) | -0.242 | (-7.45)*** |
| MTB | 0.000 | (0.93) | 0.000 | (1.30) | 0.001 | (2.42)** |
| Total Accruals | 0.650 | (30.61)*** | -0.018 | (-0.46) | 0.497 | (11.86)*** |
| Ext Financing | -0.030 | (-4.21)*** | 0.013 | (1.35) | -0.028 | (-1.95)* |
| Sales Volatility | -0.003 | (-0.26) | 0.055 | (6.05)*** | 0.000 | (0.02) |
| Intercept | 0.050 | (11.05)*** | 0.053 | (10.73)*** | 0.053 | (6.27)*** |
| 2 Digit SIC Fixed Effect | | Y | | Y | | Y |
| Observations | | 2522 | | 2522 | | 2522 |
| Adjusted R-squared | | 0.688 | | 0.150 | | 0.287 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit Client (AC) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 7: Regression Results – Dependent Variable: Audit Fees

| | (1) | | (2) | |
|--------------------|--------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | -0.026 | (-0.56) | -0.026 | (-0.56) |
| Prob | 1.105 | (50.30)*** | | |
| KPMG*Prob | -0.015 | (-0.31) | | |
| 2006 | | | 1.119 | (47.91)*** |
| 2007 | | | 1.120 | (47.42)*** |
| 2008 | | | 1.133 | (45.99)*** |
| 2009 | | | 1.036 | (42.10)*** |
| KPMG*2006 | | | -0.046 | (-0.89) |
| KPMG*2007 | | | 0.017 | (0.32) |
| KPMG*2008 | | | -0.021 | (-0.38) |
| KPMG*2009 | | | -0.007 | (-0.13) |
| Size | 0.536 | (70.62)*** | 0.537 | (70.60)*** |
| CATA | 1.047 | (16.38)*** | 1.047 | (16.38)*** |
| Foreign | 0.236 | (11.88)*** | 0.236 | (11.94)*** |
| Quick | -0.059 | (-11.18)*** | -0.059 | (-11.10)*** |
| Lev | -0.007 | (-0.09) | -0.008 | (-0.12) |
| ROA | -0.531 | (-4.31)*** | -0.546 | (-4.42)*** |
| Loss | 0.269 | (4.90)*** | 0.265 | (4.81)*** |
| GC | -0.209 | (-0.55) | -0.209 | (-0.55) |
| Dec YE | 0.051 | (2.14)** | 0.051 | (2.14)** |
| Intercept | 8.970 | (127.01)*** | 8.969 | (126.98)*** |
| Observations | | 11104 | | 11104 |
| Adjusted R-squared | | 0.689 | | 0.689 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit Client (AC) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 8: Regression Results – Dependent Variable: Switch

| | (1) Client Gain | | (2) Client Loss | |
|--------------------------|--------------------|---------------|--------------------|---------------|
| | Coeff | Z Stat | Coeff | Z Stat |
| KPMG | 0.582 | (3.37)*** | | |
| KPMG PY | | | 0.487 | (1.32) |
| Prob | -1.443 | (-6.44)*** | 0.349 | (1.22) |
| KPMG * Prob | -0.659 | (-2.18)** | | |
| KPMG PY * Prob | | | -0.427 | (-0.99) |
| Abn Accruals | -1.024 | (-1.10) | 0.341 | (0.26) |
| Short | 0.593 | (2.44)** | 0.104 | (0.43) |
| Growth | -0.282 | (-0.49) | -1.778 | (-1.87)* |
| Inv Rec | 0.313 | (0.64) | 0.557 | (0.88) |
| GC | 2.001 | (1.86)* | 1.621 | (1.39) |
| ROA | -0.745 | (-0.95) | -2.339 | (-1.91)* |
| Loss | 0.352 | (0.91) | 0.106 | (0.22) |
| Lev | -0.234 | (-0.60) | -0.013 | (-0.02) |
| ΔLev | 137.989 | (2.05)** | 89.089 | (0.82) |
| Cash | 0.426 | (0.90) | 0.728 | (1.28) |
| Size | -0.116 | (-2.81)*** | -0.321 | (-5.00)*** |
| ΔSize | -0.071 | (-0.07) | 2.253 | (1.46) |
| M&A | 0.025 | (0.07) | -0.262 | (-0.44) |
| Abn Audit Fee | 0.035 | (0.25) | -0.027 | (-0.15) |
| Intercept | -1.554 | (-2.96)*** | -0.591 | (-0.52) |
| 2 Digit SIC Fixed Effect | | Y | | Y |
| Observations | | 6253 | | 5737 |
| Pseudo R-squared | | 0.163 | | 0.062 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit Client (AC) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 9: Regression Results – Dependent Variable: Tax Fees

| | (1) | | (2) | |
|--------------------|--------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | -1.315 | (-3.87)*** | -1.315 | (-3.87)*** |
| Post | -0.110 | (-0.70) | | |
| KPMG*Post | 0.334 | (0.96) | | |
| 2010 | | | 0.032 | (0.18) |
| 2011 | | | -0.052 | (-0.28) |
| 2012 | | | -0.307 | (-1.56) |
| 2013 | | | -0.073 | (-0.36) |
| 2014 | | | -1.210 | (-0.96) |
| KPMG*2010 | | | -0.313 | (-0.72) |
| KPMG*2011 | | | 0.334 | (0.75) |
| KPMG*2012 | | | 1.061 | (2.44)** |
| KPMG*2013 | | | 0.149 | (0.33) |
| KPMG*2014 | | | 1.253 | (0.56) |
| ROA | -0.790 | (-0.51) | -0.808 | (-0.52) |
| FLR Abn Accruals | 0.794 | (0.49) | 0.886 | (0.54) |
| Size | 0.985 | (13.57)*** | 0.987 | (13.56)*** |
| FI | 11.872 | (4.03)*** | 11.831 | (4.02)*** |
| Eq Inc | -18.384 | (-0.67) | -18.899 | (-0.69) |
| Intang | -0.110 | (-0.17) | -0.111 | (-0.17) |
| PPE | -3.219 | (-4.62)*** | -3.223 | (-4.63)*** |
| NOL | 0.696 | (2.64)*** | 0.702 | (2.66)*** |
| ΔNOL | -0.700 | (-0.44) | -0.659 | (-0.41) |
| MTB | 0.033 | (1.40) | 0.034 | (1.46) |
| Lev | 0.641 | (0.96) | 0.645 | (0.97) |
| FCF | -0.197 | (-0.12) | -0.166 | (-0.10) |
| R&D | 4.076 | (1.51) | 4.112 | (1.52) |
| Intercept | 2.416 | (3.86)*** | 2.395 | (3.82)*** |
| Observations | | 6462 | | 6462 |
| Adjusted R-squared | | 0.154 | | 0.154 |

All variables are defined in Appendix A.

Sample years include 2000-2002 (pre-period) and 2006-2009 (probation period).

Tests use the Audit Client (AC) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 10: Regression Results – Dependent Variable: Tax Avoidance

Panel A: Regression Results for Equation (3)

| | (1) GAAP ETR | | (2) 3 Year GAAP ETR | | (3) Cash ETR | | (4) 3 Year Cash ETR | | (5) BTD | |
|--------------------|-----------------|---------------|------------------------|---------------|-----------------|---------------|------------------------|---------------|--------------|---------------|
| | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> | <i>Coeff</i> | <i>T Stat</i> |
| KPMG | 0.016 | (1.90)* | 0.011 | (1.64) | -0.007 | (-0.64) | -0.007 | (-0.89) | 0.003 | (0.68) |
| Post | -0.017 | (-3.85)*** | -0.014 | (-3.82)*** | -0.030 | (-5.25)*** | -0.025 | (-5.35)*** | 0.009 | (5.21)*** |
| KPMG*Post | -0.007 | (-0.62) | -0.010 | (-1.17) | 0.001 | (0.05) | -0.003 | (-0.33) | 0.001 | (0.28) |
| ROA | 0.364 | (6.61)*** | 0.308 | (7.29)*** | 0.105 | (1.59) | 0.264 | (5.40)*** | 0.227 | (8.13)*** |
| FLR Abn Accruals | -0.150 | (-2.31)** | -0.106 | (-2.13)** | -0.350 | (-4.44)*** | -0.131 | (-2.24)** | 0.217 | (6.01)*** |
| Size | -0.007 | (-4.09)*** | -0.007 | (-4.30)*** | -0.001 | (-0.42) | -0.001 | (-0.69) | 0.001 | (0.93) |
| FI | -0.633 | (-8.00)*** | -0.556 | (-7.59)*** | -0.341 | (-3.75)*** | -0.213 | (-2.43)** | 0.222 | (4.71)*** |
| Eq Inc | -1.777 | (-2.51)** | -0.337 | (-0.37) | -1.306 | (-1.58) | -0.298 | (-0.32) | 0.207 | (0.67) |
| Intang | -0.011 | (-0.66) | -0.006 | (-0.40) | -0.058 | (-2.94)*** | -0.023 | (-1.27) | 0.015 | (2.67)*** |
| PPE | -0.040 | (-2.01)** | -0.029 | (-1.52) | -0.147 | (-6.33)*** | -0.104 | (-4.96)*** | 0.045 | (6.86)*** |
| NOL | 0.008 | (1.31) | -0.001 | (-0.22) | -0.031 | (-4.11)*** | -0.029 | (-4.07)*** | 0.006 | (2.25)** |
| ΔNOL | 0.023 | (0.32) | 0.026 | (0.52) | 0.398 | (4.65)*** | 0.367 | (5.31)*** | -0.121 | (-3.75)*** |
| MTB | -0.001 | (-1.77)* | -0.001 | (-1.61) | -0.001 | (-1.06) | -0.002 | (-3.03)*** | -0.001 | (-2.39)** |
| Lev | -0.001 | (-0.04) | 0.008 | (0.41) | -0.044 | (-2.09)** | -0.042 | (-2.21)** | 0.011 | (1.61) |
| FCF | -0.270 | (-4.44)*** | -0.192 | (-3.84)*** | -0.317 | (-4.20)*** | -0.152 | (-2.61)*** | 0.028 | (0.95) |
| R&D | -0.410 | (-6.10)*** | -0.442 | (-7.50)*** | -0.502 | (-5.99)*** | -0.564 | (-6.85)*** | 0.107 | (3.46)*** |
| Intercept | 0.375 | (24.08)*** | 0.375 | (25.25)*** | 0.403 | (20.12)*** | 0.346 | (19.53)*** | -0.038 | (-6.14)*** |
| Observations | 5106 | | 3710 | | 5106 | | 3710 | | 4346 | |
| Adjusted R-squared | 0.096 | | 0.175 | | 0.073 | | 0.130 | | 0.276 | |

All variables are defined in Appendix A.

Sample years include 2006-2009 (probation period) and 2010-2014 (post period).

Tests use the Audit and Tax Client (AT) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).

Table 10: Regression Results – Dependent Variable: Tax Avoidance

Panel B: Regression Results for Equations (4)

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|--------------------|----------|------------|-----------------|------------|----------|------------|-----------------|------------|--------|-----------|
| | GAAP ETR | | 3 Year GAAP ETR | | Cash ETR | | 3 Year Cash ETR | | BTD | |
| KPMG | 0.016 | (1.90)* | 0.011 | (1.64) | -0.007 | (-0.65) | 0.011 | (1.64) | 0.003 | (0.69) |
| 2010 | -0.012 | (-2.25)** | -0.009 | (-2.22)** | -0.025 | (-3.30)*** | -0.009 | (-2.22)** | 0.011 | (4.82)*** |
| 2011 | -0.022 | (-3.96)*** | -0.017 | (-3.74)*** | -0.051 | (-6.81)*** | -0.017 | (-3.74)*** | 0.015 | (6.83)*** |
| 2012 | -0.013 | (-2.11)** | -0.017 | (-3.42)*** | -0.021 | (-2.55)** | -0.017 | (-3.42)*** | 0.003 | (1.32) |
| 2013 | -0.020 | (-3.12)*** | -0.030 | (-2.21)** | -0.023 | (-2.79)*** | -0.030 | (-2.21)** | 0.007 | (3.24)*** |
| 2014 | -0.013 | (-0.61) | | | -0.002 | (-0.08) | | | 0.009 | (1.40) |
| KPMG*2010 | 0.005 | (0.25) | -0.012 | (-1.07) | 0.001 | (0.03) | -0.012 | (-1.07) | 0.000 | (0.02) |
| KPMG*2011 | -0.018 | (-1.34) | -0.005 | (-0.52) | -0.000 | (-0.01) | -0.005 | (-0.52) | -0.001 | (-0.19) |
| KPMG*2012 | -0.011 | (-0.79) | -0.008 | (-0.83) | -0.010 | (-0.58) | -0.008 | (-0.83) | 0.010 | (1.88)* |
| KPMG*2013 | 0.002 | (0.15) | -0.072 | (-3.90)*** | 0.014 | (0.78) | -0.072 | (-3.90)*** | -0.004 | (-0.83) |
| KPMG*2014 | -0.077 | (-3.12)*** | | | -0.089 | (-2.08)** | | | 0.012 | (0.82) |
| Controls | Y | | Y | | Y | | Y | | Y | |
| Observations | 5106 | | 3710 | | 5106 | | 3710 | | 4346 | |
| Adjusted R-squared | 0.096 | | 0.175 | | 0.074 | | 0.175 | | 0.278 | |

All variables are defined in Appendix A.

Sample years include 2006-2009 (probation period) and 2010-2014 (post period).

Tests use the Audit and Tax Client (AT) sample.

Standard errors are clustered by firm.

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed test).