

The Impact of Large Tax Settlement Favorability on Firms' Subsequent Tax Avoidance

Andrew R. Finley

Claremont McKenna College
Robert Day School of Economics and Finance
500 E. Ninth St.
Claremont CA, 91711-6400
afinley@cmc.edu
(909) 607-3760

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Key Words: tax enforcement; tax avoidance; FIN 48

JEL Classifications: H26; K42; M41

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Abstract

In this study, I examine how large tax settlement favorability affects changes in tax avoidance. Utilizing information disclosed in firms' tax footnote pursuant to FIN 48, I develop a measure of large tax settlement favorability based on management's expected outcome and validate it in multiple ways. My results indicate that firms with relatively favorable settlements subsequently increase their tax avoidance, but that firms with relatively unfavorable settlements do not change their behavior. The implication is that favorable settlements inform management of weaknesses in the tax authority's monitoring or opportunities to engage in additional tax avoidance. In additional analysis, I find that increasingly unfavorable settlements are positively associated with the likelihood of a tax related restatement announcement, highlighting a link between adverse outcomes for tax and financial reporting.

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1. Introduction

Given the economic magnitude of tax avoidance and governments' limited ability to comprehensively monitor firm behavior, it is important to understand how firms respond to settlements with the tax authority.¹ To date, however, research remains inconclusive as to the tax authority's efficacy in deterring corporate tax avoidance (e.g., Lennox et al. 2015; DeBacker et al. 2015) and has yet to consider variation in how firms interpret large settlements. I propose the favorability of a large settlement from the firm's perspective is critical to identifying perceptions of tax authority monitoring, and hence how a firm responds to this resolution.

Extant research typically treats examinations as monitoring mechanisms reflective of the tax authority's vigilance and any forfeiture of tax benefits in a settlement as supposed disciplining events (e.g., Allingham and Sandmo 1972; Hoopes et al. 2012; Erard 1992; Lennox et al. 2015). Many firms, however, perceive settlements with the tax authority as favorable. For instance, NCR Corp.'s tax footnote in 2008 reflects \$106 million of settlements relating primarily to an IRS examination covering its 2000-2006 tax years. The firm, however, describes the settlement as favorable because it had over-reserved for the settlement for financial accounting purposes, such that the resolution resulted in a \$19 million tax benefit. Therefore, to the extent a firm anticipates forfeiting a portion of its tax positions in an examination, but the amount actually forfeited is less than anticipated, the settlement may appear relatively favorable to the firm.

I expect the inferences firms draw regarding the tax authority's vigilance and the sustainability of their own tax avoidance strategies to differ depending on the favorability of the tax settlement. Firms with relatively favorable settlements may perceive deficiencies in the tax

¹ For instance, the Internal Revenue Service (IRS) estimated the 2006 corporate tax gap more than doubled since 2001 to \$67 billion, which represents almost 19 percent of corporate taxes collected (IRS 2012; OMB 2014).

authority's monitoring or opportunities to engage in more aggressive behavior with minimal risk. If such learning increases the perceived benefits derived from tax avoidance, I expect firms to increase their tax avoidance following a favorable settlement with the tax authority. Meanwhile, firms with relatively unfavorable settlements may perceive vigilance in the tax authority's monitoring or an elevated risk in their tax avoidance strategies. If such learning decreases the perceived benefits (or increases the perceived costs) derived from tax avoidance, I expect firms to decrease their tax avoidance following an unfavorable settlement with the tax authority.

There are a number of reasons settlement favorability would not affect subsequent tax avoidance. For one, even if a firm considers a settlement favorable because it retains more benefits than it expected, the scrutiny of its positions may be sufficient to discourage it from engaging in further tax avoidance. Such a firm may also have limited opportunity under the law to increase its tax avoidance. If a firm considers a settlement unfavorable and forfeits more benefits than it expected, the firm may continue to engage in similar levels of tax avoidance if it views the activity as an external financing mechanism (Edwards et al. 2016) or as an opening bid in subsequent settlement negotiations (Slemrod et al. 2001). Finally, to the extent a settlement, regardless of its favorability, relates to a non-recurring transaction, it is unlikely to revise a firm's perceived costs or benefits derived from tax avoidance, thus making the firm less likely to change its behavior.

I identify tax settlements from the tabular reconciliation of a firm's tax footnote pursuant to FIN 48 (now codified as ASC 740-10) and restrict my sample to large settlements (i.e. above the sample median) since these major events are more likely to change firm behavior. To construct my measure of large settlement favorability, I regress the current period interest and penalties attributable to UTBs that affect net income on determinants unrelated to tax

settlements. The residual from this regression captures large tax settlement favorability. If firms anticipate forfeiting a portion of their uncertain tax positions and accrue interest and penalties when originally taking the position, then a favorable resolution (in which the amount forfeited to the tax authority is less than the UTB accrued) will result in a reversal of interest and penalty expense. On the other hand, if firms do not anticipate forfeiting their uncertain tax positions or do not adequately accrue for interest and penalties when taking the position, then an unfavorable resolution will result in incrementally greater interest and penalties accrued in the settlement year. Consequently, my measure of large tax settlement favorability is relative to a firm's expectations of the sustainability of its positions and relative to the other firms in my sample.²

As an example, Atrion concluded an audit in 2012 in which it retained approximately \$641,000 of claimed R&D tax credits for which it had previously accrued UTBs, and recorded an additional benefit in interest and penalties of \$51,000 upon settlement. On the other hand, Active Network settled a tax position in 2012 for \$2.2 million (including \$0.9 million interest and penalties) when it had previously only accrued \$0.3 million of UTBs on the underlying position. I consider Atrion's (Active Network's) settlement to be favorable (unfavorable) because the firm retained more (less) tax benefits than it anticipated based on its financial reporting.

As part of my analysis, I validate my measure of large tax settlement favorability before considering its impact on subsequent tax avoidance. Consistent with relatively unfavorable resolutions incurring incremental tax payments in the settlement year, I observe that my measure, which is increasing in tax settlement unfavorability, is positively associated with a firm's cash effective tax rate (ETR) in the settlement year. I also find the measure is positively associated

² This approach assumes that the UTBs firms accrue, along with the corresponding interest and penalties, bear some approximation to management's expectations regarding the sustainability of uncertain tax positions. I discuss this assumption further in the section outlining the development of my measure of settlement favorability.

with current period increases in UTB accruals related to prior period positions, further demonstrating that firms with relatively unfavorable resolutions did not anticipate the settlement and failed to adequately reserve for UTBs when originally taking the uncertain tax position. Overall, these findings help validate my measure of residual interest and penalties as capturing large tax settlement favorability.

To test my hypothesis, I partition my measure of large settlement favorability and consider firms in the lowest (highest) tercile to have relatively favorable (unfavorable) settlements. The results I obtain are robust to various design specifications. I find, consistent with my hypothesis, that firms with relatively favorable settlements have cash effective tax rates (ETR) that are 6.2 percent lower in the year following the settlement relative to the year before. The association between favorable tax settlements and increased tax avoidance is concentrated among smaller firms and firms that do not engage an industry specialist auditor, two groups with greater learning opportunities from a settlement since their access to the tax authority and a knowledgeable external advisor, respectively, is more limited. These cross-sectional results are consistent with my interpretation that firms learn from a favorable enforcement outcome about weaknesses in the tax authority's monitoring or opportunities to engage in additional tax avoidance. I do not find evidence, however, that firms with relatively unfavorable large settlements subsequently decrease their tax avoidance, which suggests these firms do not revise their expectations of the costs or benefits derived from engaging in tax avoidance. My findings suggest these firms do not have greater external financing needs or use aggressive tax return positions as a starting point for subsequent settlement negotiations. Instead, the failure to change following unfavorable settlements could be attributable to the non-recurring transactions that give rise to these events in my sample.

In additional analysis, I continue to observe an increase in tax avoidance among firms with favorable settlements beyond one year. Further, I find that my measure of tax settlement unfavorability is increasing in the likelihood of a tax related restatement announcement in the year of or year subsequent to a settlement. Broadly, this finding illustrates how shortcomings in a firm's tax department can yield adverse outcomes both with the tax authority and for financial reporting purposes.

This study offers three contributions to the literature. First, it demonstrates that tax settlements can produce favorable outcomes that appear to inform firms of weaknesses in the tax authority's monitoring or opportunities to engage in additional tax avoidance. Consequently, the tax authority should pay close attention to firms that retain significant benefits in an examination, as my findings suggest these firms are more likely to subsequently increase their tax avoidance activities. Second, this study develops a measure of large tax settlement favorability based on management expectations using publicly available data. Researchers may find this measure useful in examining determinants of large tax settlement favorability or other consequences associated with these events. Finally, this study documents that relatively unfavorable large settlements are associated with adverse financial reporting consequences to the firm, thereby complementing Bauer and Klassen's (2016) finding that these events are associated with negative market reactions. The increased likelihood of a tax restatement from relatively unfavorable large tax settlements- at least partly a function of firms' under-accruing UTBs- may help explain why firms are typically overly-conservative in their UTB accruals. It should also alert auditors and their regulators to the attention required when assessing the appropriateness of firms' UTB reporting.

The remainder of this paper proceeds as follows. Section 2 reviews prior literature and develops my hypotheses, Section 3 provides institutional background surrounding FIN 48 and outlines my tax settlement favorability measure, Section 4 discusses the research design, sample selection, and results for my hypothesized tests, Section 5 presents additional analysis and robustness tests, and Section 6 concludes.

2. Prior literature and hypothesis development

Extant empirical research generally confirms theoretical work by Allingham and Sandmo (1972) that the *ex ante* threat of enforcement deters tax avoidance. In the corporate sphere specifically, Hoopes et al. (2012) find that increased audit probability curtails tax avoidance, while Graham et al.'s (2014) survey of tax executives identifies tax authority scrutiny as an important deterrent to avoidance activities.³ Further, Shevlin et al. (2017) find that firms headquartered in amnesty-granting states increase their state tax avoidance, suggesting amnesty-granting programs signal a reduced threat of tax enforcement. Field studies of individual taxpayer returns and laboratory experiments generally provide further support that the threat of a tax examination can effectively deter tax avoidance (i.e. Dubin et al. 1990; Alm et al., 1992; Tauchen et al., 1993; Plumley 1996; Alm and McKee 2006; Dubin 2007).

Slemrod et al. (2001) offer an important exception to these findings. In a controlled experiment of Minnesota taxpayers receiving a notice that the state would be auditing their return, high income individuals who received the notice decreased their reported tax liability relative to the previous year. The authors suggest that increased tax avoidance under stricter monitoring may occur because the positions claimed on the tax return serve as a starting point for

³ Ayers et al. (2016) find, however, that audit certainty, defined by large firms' participation in the IRS' Coordinated Industry Case (CIC) program, does not affect tax return reporting relative to a matched sample of large firms not in the CIC program.

negotiations with the tax authority. The implication is that if taxpayers do not claim uncertain benefits on their filed returns, they are conceding these positions to the tax authority before an exam even commences and depriving themselves of valuable bargaining space during the negotiation process.

There is mixed evidence in how the *ex post* realization of enforcement affects tax avoidance. While early laboratory studies found a deterrent effect of tax examinations (Spicer and Hero 1985; Webley 1987), more recent work notes that subjects increase tax avoidance immediately following a tax examination and then subsequently decrease that activity over time (Mittone 2006; Maciejovsky et al. 2007). These latter studies attribute these findings to a “bomb crater” effect, in which subjects’ perceived risk of a subsequent audit is initially low and then increases over time.⁴

From an archival standpoint, inferences from early studies regarding the efficacy of audits, and settlements in particular, on subsequent individual taxpayer reporting are difficult to make (Long and Schwartz 1987; Erard 1992). More recently however, Gemmell and Ratto (2012) observe that individual taxpayers in the UK increase (decrease) their tax avoidance subsequent to a compliant (noncompliant) examination finding. Their results highlight how responses to tax examinations among individuals appear to be conditional on assessments made from the examination.

In the corporate sphere, Lennox et al. (2015) find that private firms in China decrease tax avoidance following settlements, consistent with the deterrence effect. Meanwhile, DeBacker et al. (2015) find that firms increase tax avoidance for a few years following an IRS settlement and then subsequently decrease these activities over time, which they attribute to the “bomb crater”

⁴ The term refers to the belief that the safest place for soldiers to hide during a war is the crater of a recent bomb (Guala and Mittone 2005). In the context of tax avoidance, subjects may infer the safest period to avoid taxes is shortly a tax examination.

effect. Importantly, neither study considers that variation in firms' perception of the enforcement outcome can produce differential incentives to engage in future tax avoidance.⁵ Understanding how settlement resolutions compare to management's expected outcomes is important to governments seeking to understand the efficacy of their enforcement efforts and deter subsequent tax avoidance.

I seek to capture variation in enforcement outcomes by measuring the favorability of a large corporate tax settlement and then relating it to changes in firms' tax avoidance. In order for a settlement to change firms' tax avoidance, it should change either firms' expectations of the immediate savings available by engaging in the activity or the costs of returning those savings and/or paying a penalty.⁶

Consistent with this Bayesian framework, Snow and Warren (2007) develop a model showing that individuals update their expectations of future tax audit probability based on past audit experience. The psychology literature similarly demonstrates that when uncertainty makes estimating outcomes difficult, individuals rely on past personal experience to make decisions (Barron and Erev 2003; Hertwig et al. 2004). With respect to corporate decision-making, Dittmar and Duchin (2016) find that CEOs' prior personal experiences affect firm capital structure and investment. Furthermore, Malmendier and Nagel (2011) find that "Depression babies" who experienced a large macroeconomic shock during their lifetime are less willing to take on financial risk. These studies suggest managers learn from past experiences in a way that affects their firms' decision-making.

⁵ DeBacker et al. (2015) acknowledge the possibility that settlements may be less putative than firms anticipated, but do not attempt to empirically test this assertion or explain its relation to the bomb crater effect.

⁶ The penalty is not necessarily monetary. For instance, Graham et al. (2014) note that corporate tax executives identify reputational backlash as an important cost firms potentially pay for engaging in tax avoidance.

As tax avoidance involves significant uncertainty (Rego and Wilson 2012), information learned through previous interactions with the tax authority should revise managerial assessments regarding the sustainability of a firm's tax avoidance strategies. Although firms, either through their internal tax department or external advisors, may have formed impressions of the tax authority's vigilance through prior experience, they are not necessarily aware of how the tax authority will treat their uncertain tax positions. The tax law does not address all facts and circumstances unique to a specific firm. Further, firms continuously develop new technologies or business practices that create uncertainty in their tax reporting that is not resolved until the conclusion of an examination. Therefore, settlements should still provide an opportunity for learning to the extent they inform firms of the tax authority's vigilance or tolerance on novel issues. If firms experience a favorable large tax settlement, they may either perceive deficiencies in the tax authority's overall monitoring or learn they can successfully take more aggressive tax return positions going forward in particular areas. Consequently, they will increase their expectations of the benefits derived from tax avoidance. If, on the other hand, firms experience an unfavorable large tax settlement, they may either perceive greater vigilance in the tax authority's overall monitoring or learn about weaknesses in their own positions in particular areas. Consequently, they will decrease their expectations of the benefits- or increase their expectations of the costs- derived from tax avoidance. As such, I state my hypotheses stated in alternative form:

H1a: Firms increase their tax avoidance following a favorable large tax settlement.

H1b: Firms decrease their tax avoidance following an unfavorable large tax settlement.

There are various reasons large tax settlement favorability may not change firms' tax avoidance. If the resolution does not revise a firm's perception of the tax authority's vigilance or the sustainability of its positions, there would not be a change in tax avoidance. For instance, if the resolution pertains to a non-recurring transaction, it is unlikely to revise a firm's assessment

of its overall tax planning strategies. Further, for firms with favorable settlements, there may be limited opportunity under the law to further increase tax avoidance activities. Relatedly, these firms may have limited desire to further increase their tax avoidance since such activity could invite additional scrutiny from the tax authority or backlash from the general public (Dyreng et al. 2016).

Firms with unfavorable large tax settlements may strategically choose to maintain similar tax avoidance strategies despite the adverse outcome in order to gain bargaining space for future negotiations with the tax authority. Consistent with this theory, Gallemore et al. (2014) fail to find evidence of firms changing their tax avoidance after being accused of engaging in tax sheltering. Further, firms with unfavorable settlements may view the up-front savings of continued tax avoidance as an external financing mechanism (Edwards et al. 2016) that justifies subsequently returning those savings to the tax authority. Saavedra (2017) finds that firms with extremely high annual cash-ETRs are more likely to experience another extremely high annual cash-ETR over the following five-year period, suggesting unsuccessful tax avoidance functions similarly to a government loan that is oftentimes repaid. If unfavorable settlements do not change firms' calculus that the immediate savings from tax avoidance continue to outweigh the expected cost of returning those savings and paying interest and penalties, they will continue to engage in similar levels of tax avoidance despite the unfavorable settlement.

3. Institutional background and large tax settlement favorability measure

3.1 Institutional background

For fiscal periods beginning after December 15, 2006, FIN 48 (now codified as ASC 740-10) requires firms to evaluate each individual tax position taken on any foreign or domestic tax return, including the decision to file a return, and determine whether “it is more-likely-than-not,

based on the technical merits, that the [tax] position will be sustained upon examination” (FASB 2006, p. 5). FIN 48 requires that firms establish reserves, referred to as unrecognized tax benefits (UTBs), equal to the tax liability exposure for those positions that do not meet this threshold, such that the economic benefit of the tax return position is not fully recognized for financial statement purposes.⁷

Publicly held firms must present a tabular reconciliation of their UTBs at the beginning and end of the period, including:

1. The gross amounts of the increases and decreases in UTBs as a result of tax positions taken during a prior period
2. The gross amounts of increases and decreases in UTBS as a result of tax positions taken during the current period
3. The amounts of decreases in UTBs relating to settlements with the taxing authorities
4. Reductions to UTBs as a result of a lapse in the applicable statute of limitation (FASB 2006)

Guidance provided by the Big4 accounting firms recommends firms report only the amount forfeited to the tax authority in the UTB settlement line of the tabular reconciliation. For instance, Deloitte (2011) provides an illustrative example of disclosing positions settled for less than the UTB originally accrued:

“Example 6-7: Entity A has recorded a UTB of \$1,000 as of December 31, 20X7 (the end of its fiscal year). During the fourth quarter of fiscal year 20X8, Entity A settles the tax position with the tax authority and makes a settlement payment of \$800 (recognizing a \$200 benefit related to the \$1,000 tax position). Entity A’s tabular reconciliation disclosure as of December 31, 20X8, would show a decrease of \$200 in UTBs from prior periods...and a decrease of \$800 in UTBs related to settlements...” (p.196).

In practice, however, firms oftentimes release the entire amount of the UTB through the settlement line, even if the amount forfeited to the tax authority is just a fraction of the UTB accrued. For example, Dole Corp reversed \$41.2 million of UTBs through the settlement line of

⁷ For those positions that meet the more-likely-than-not (MLTN) threshold, firms only recognize “the largest amount of tax benefit that is greater than fifty percent likely of being realized upon effective settlement with the tax authority” (FASB 2006, p. 5).

its tabular reconciliation in 2011 but only \$20 million represented a cash payment. Therefore, while the tabular reconciliation is useful to identifying resolutions with the tax authority, it is not appropriate to assessing the favorability of a tax settlement.

3.2 Development of large tax settlement favorability measure

To ascertain large tax settlement favorability, I rely on the interest and penalties attributable to UTBs that affect net income and should be disclosed within the tax footnote under FIN 48 (FASB 2006).⁸ Firms begin accruing penalties in the year the UTB is claimed, such that the disclosed interest and penalty expense should be increasing in the level of UTBs pertaining to current period tax positions. Interest, meanwhile, begins to first accrue in the year the tax return to which the UTB relates to is filed (PwC 2013) and continues to accrue until the UTB is settled. Therefore, interest and penalties should be increasing in the level of beginning of year cumulative UTBs that are not resolved during the current year. Lastly, if the statute of limitations lapses without the tax authority examining a UTB, firms will reverse the UTB along with any interest and penalties it had accrued. Therefore, interest and penalties should be decreasing in the UTBs that reverse via lapses in the statute of limitations.

When the UTBs accrued are greater (less) than the amount ultimately settled with the tax authority, the firm should record a benefit (expense) attributable to interest and penalties. Controlling for interest and penalties stemming from UTB accruals for current period positions, cumulative beginning of year UTBs that remain unresolved, and UTB reversals via the statute of

⁸ Firms have the option of classifying the interest and penalties, which accrue in accordance with the tax law in the jurisdiction to which the UTB relates, as part of tax expense, or another expense classification (i.e. interest expense; SG&A expense). This option does not, however, affect the requirement to disclose these amounts in the tax footnote.

limitations, I infer that the residual interest and penalties from the below model captures the favorability of a large settlement.⁹

$$INTPEN_{i,t} = \beta_0 + \beta_1 * CY_UTB_{i,t} + \beta_2 * OPEN_UTB_{i,t} + \beta_3 * SOL_UTB_{i,t} + \varepsilon \quad (1)$$

The dependent variable, *INTPEN*, is current year interest and penalties relating to UTBs that affect net income. *CY_UTB* is the net current year increases in UTBs related to current period positions, *OPEN_UTB* is the UTBs the firm had accrued at the beginning of the year that remain unresolved at year-end, and *SOL_UTB* is the UTBs that reverse due to a lapse in the statute of limitations during the year. I expect the coefficients on β_1 and β_2 to be positive since firms should accrue penalties when they first take uncertain tax positions and accrue interest so long as the uncertain position remains unresolved. I expect β_3 to be negative since firms should reverse any previously accrued interest and penalties when they retain UTBs for which the statute of limitations has lapsed. I scale all of the above variables by beginning of year total assets and include industry (Fama-French 17) and year fixed effects.¹⁰ The residual, which I term as *UNFAV*, is increasing (decreasing) in tax settlement unfavorability (favorability).

To illustrate how the interest and penalties can reveal the favorability of a tax settlement, suppose Firms A and B have accrued \$20 interest and penalties pertaining to a UTB under examination. Suppose the tax authority assesses \$15 interest and penalties as part of Firm A's settlement and \$30 interest and penalties as part of Firm B's settlement. Firm A would record a \$5 benefit in interest and penalties attributable to its relatively favorable settlement, while Firm B would record \$10 additional interest and penalty expense attributable to its relatively unfavorable settlement. Therefore, after controlling for the portion of interest and penalties

⁹ I do not include UTB increases or decreases related to prior period positions in Model 1 because these items may relate to the position settled with the tax authority.

¹⁰ I estimate Model 1 on the pooled sample, because estimating the model within industry-years requires further sample attrition where there are not sufficient observations within a given industry-year to reliably estimate the model.

unrelated to the settled tax positions, the residual from Model 1 reflects the favorability of each firm's tax settlement relative to its own expectations and relative to the sample on which I estimate the model.

It is possible the residual may also capture abnormal interest and penalties on unsettled tax positions. Regardless, this abnormal interest and penalties should still reflect a firm's expectations of the sustainability of its tax positions during a settlement year in which it has had significant interaction with the tax authority. Therefore, *UNFAV* is still a suitable proxy for measuring the favorability of a tax settlement.

In a concurrent working paper, Bauer and Klassen (2016) develop a measure intended to capture settlement favorability using textual analysis and find that firms disclosing unfavorable settlements experience negative abnormal returns. Although our measures are conceptually similar, a distinction between their categorization and mine is that they consider settlements involving cash payments made to the tax authority as necessarily indicative of an unfavorable outcome, whereas I do not if the firm had adequately reserved for the settled position.

An accrual based measure is best suited for my theoretical construct since my hypotheses predict firms will change their tax avoidance when their expected benefits from tax avoidance changes.¹¹ Even if firms incur large cash settlements, their expectations of the benefits from tax avoidance may not change if they had provisioned for the amount, particularly when interest rates are low and penalties are abated. The extent to which firms reserved for the settlement, however, reflects favorability relative to managerial expectations and is thus more likely to lead to a change in behavior.

¹¹ I also use an accrual-based measure because firms do not consistently disclose a cash settlement amount, making it difficult to distinguish favorability with a cash-based measure.

Because FIN 48 conservatively requires firms to assume the tax authority will examine any uncertain tax position and have full knowledge of all relevant information, a concern with the above model is that UTBs accrued, including the related interest and penalties, may not reflect management's expectation of a position's actual sustainability. In practice, the tax authority may not have the resources to detect all UTBs or gather all relevant information. These resource constraints may explain why firms, on average, typically accrue more UTBs than are actually forfeited to the tax authority (Robinson et al. 2016). Given this observation, firms on average should record a benefit in interest and penalties due to settlements, plausibly making a settlement appear more favorable than management's actual expectation. Deriving tax settlement favorability from the residual in Model 1 alleviates some of this concern since the conservatism imposed by the standard applies to all firms and should be captured by the model's intercept. Therefore, my measure of tax settlement favorability is relative to other firms in the sample.

Another concern is that firms may opportunistically manipulate their UTB reporting so that the accruals, including any interest and penalties, do not reflect management's expectations. Gupta et al. (2016), however, do not find any evidence of firms managing earnings through their UTBs post-FIN 48. Further, Lisowsky et al. (2013) link UTB disclosures to actual tax shelter participation, suggesting these financial reporting accruals relate to actual tax position uncertainty. These studies assuage concerns that firms manipulate their UTB reporting and provide credence to a maintained assumption that these accruals, including interest and penalties, reflect management's expectations of the tax position's sustainability.¹²

¹² FIN 48 allows firms to consider administrative precedent in accounting for UTBs, including any accrued penalties (PwC 2013). The discretion afforded to firms in assessing whether the tax authority will impose penalties, or how much it will impose, provides an example of how managerial expectations are embedded within the reporting standard.

To empirically measure large tax settlement favorability, I first identify 7,021 firm-years that disclose a tax settlement in the UTB tabular reconciliation of their tax footnote between 2007 and 2015. I then delete 602 firm-years in the regulated or financial industries and another 2,360 firm-years missing data on interest and penalty expense. Next I delete another 2,027 firm-years whose settlements, scaled by the beginning of year UTBs, are below the yearly sample median to ensure that my sample captures meaningful events that will more plausibly change firm behavior.¹³ Finally, I truncate 120 firm-years with values for any of the outcome or explanatory variables from Model 1 in the top or bottom percentile.¹⁴ This procedure yields a sample of 1,912 observations for which I can measure the favorability of a large tax settlement.

[INSERT TABLE 1]

Table 2, Panel A presents summary statistics of the variables from Model 1. The mean (median) interest and penalties accrued on UTBs during the year are 0.02 (0.01) percent of beginning of year assets. Over a quarter of the sample records a benefit in interest and penalties, as evidenced by -0.0001 lower quartile value of *INTPEN*. Such benefits arise when firms reverse previously accrued interest and penalties on positions that were not forfeited to the tax authority. The distribution of *INTPEN* suggests sufficient variation in tax settlement favorability across the sample.

[INSERT TABLE 2]

¹³ I scale settlements by UTBs so that the amount settled is a function of the UTBs at stake. The results of my hypothesized test are robust to scaling settlements by beginning of year total assets. These large settlements may not necessarily reflect large forfeitures to the tax authority if firms reverse the entire UTB accrual through the settlement line rather than just the amount forfeited (i.e. Dole Corp in 2011). Nevertheless, using the settlement line is appropriate since it allows me to capture firms with the largest amounts at stake in the settlement and the primary purpose of my study is to evaluate the impact of large tax settlement favorability.

¹⁴ The magnitude of the coefficients and their statistical significance in Model 1 are sensitive to this design choice. As Compustat is known to misreport dollar units in the tabular reconciliation (Lisowsky et al. 2013), removing outlier observations likely removes observations with incorrectly stated amounts.

Table 2, Panel B presents results from Model 1. As expected, the level of interest and penalties for the year is increasing in the UTBs accrued on current year positions and unresolved UTBs from the beginning of the year and is decreasing in the UTBs that reverse due to a lapse in the statute of limitations. These results provide some assurance that the model's empirical proxies are capturing their theoretical constructs.

I perform various tests to validate the appropriateness of the model's residual, which I term *UNFAV*, as a measure increasing in large tax settlement unfavorability. First, I regress a firm's cash effective tax rate on *UNFAV* and controls used in my difference-in-difference analysis (see Model 2).¹⁵ The coefficient on *UNFAV* is positive and statistically significant ($p < 0.05$, untabulated), consistent with relatively unfavorable resolutions requiring higher payments to the tax authority in the settlement year. Second, I regress UTBs accrued in the current period attributable to prior period positions (TXTUBPOSPINC in Compustat), scaled by beginning of year assets on *UNFAV* and the aforementioned controls. If firms have relatively unfavorable tax settlements, they may accrue additional UTBs relating to the settled position or related positions taken in other prior years on this line of the tabular reconciliation.¹⁶ The coefficient on *UNFAV* in this regression is positive and statistically significant ($p < 0.01$, untabulated), providing further evidence that this measure captures under-accruals of UTBs that is reflective of unfavorable tax settlements. Finally, I find that firms with *UNFAV* values in the top tercile have a higher incidence of reporting an internal control weakness over the tax account in the settlement year or preceding three years than those in the lowest tercile ($p < 0.10$, untabulated). Moreover, I do not observe any difference in the incidence of nontax internal

¹⁵ The sample for this test is limited to pre-tax profitable firms, consistent with prior literature. I also run this regression on the effective tax rate and obtain similar results.

¹⁶ Guidance provided by each of the Big4 accounting firms suggests that when firms have not adequately reserved for UTBs in a settlement year, they should record both an increase to UTBs relating to prior period positions for the unreserved amount and then record a decrease to UTBs for the amount of the position forfeited in the settlement.

control weaknesses based on settlement favorability. The higher incidence of tax internal control weaknesses prior to settlement among firms with unfavorable outcomes is consistent with these firms' failure to appropriately identify the uncertainty in their tax positions and accrue reserves accordingly. Overall, these findings support my assertion that the *UNFAV* proxy captures tax settlement favorability.

4. Research Design

4.1 Design Specification

To test whether firms with relatively favorable (unfavorable) large settlements increase (decrease) their tax avoidance following these resolutions, I implement a difference-in-difference design in which I compare firms' annual cash ETR in the year before and after either a favorable or unfavorable large settlement. I only look at one year before and after the settlement to mitigate further sample attrition that occurs when firms have multiple settlements in the testing window. I discuss this issue further, as well as an alternate approach, in additional analysis.

For examinations that span multiple years, it is likely the firm learns something about the tax authority's vigilance prior to the settlement year. Nevertheless, as the settlement year represents the culmination of learning when firms have resolved uncertainty surrounding their tax positions and can make informed decisions about subsequent planning activities, this is the appropriate point to evaluate changes in tax avoidance.¹⁷ A one-year window is appropriate because changes in tax planning can produce immediate changes in cash ETRs (Kim et. al. 2015). For instance, firms may immediately opt to claim more or fewer tax benefits under various provisions of the tax code related to the R&D tax credit or domestic production activities

¹⁷ To the extent firms adjust their tax planning activities before a settlement, this should bias against finding a result consistent with my hypotheses.

deduction (“DPAD”). Further, firms may immediately modify the expense allocation percentages in a cost-sharing arrangement with a foreign subsidiary based on a transfer pricing settlement.

I partition the *UNFAV* measure into terciles and retain only those settlement firms that fall in the top (most unfavorable) or bottom (most favorable) terciles. I then estimate a firm’s cash ETR through the following model:

$$CASH_ETR_{i,t} = \beta_0 + \beta_1 * POST_{i,t} + \beta_2 * HIGH_UNFAV_{i,t} + \beta_3 * POST * HIGH_UNFAV_{i,t} + \beta_4 * SIZE_{i,t} + \beta_5 * LEVERAGE_{i,t} + \beta_6 * MTB_{i,t} + \beta_7 * NOL_{i,t} + \beta_8 * RD_INTENSITY_{i,t} + \beta_9 * CAPX_{i,t} + \beta_{10} * ROA_{i,t} + \beta_{11} * FOREIGN_INC_{i,t} + \beta_{12} * DACC_{i,t} + \beta_{13} * BEG_UTB_{i,t} + \beta_{14} * BIG4_{i,t} + \beta_{15} * IO_PCT_{i,t} + \varepsilon_{i,t} \quad (2)$$

POST is equal to one for firm-years after the large tax settlement and zero for firm-years beforehand. *HIGH_UNFAV* is equal to one for observations with the most relatively unfavorable settlements, and zero for observations with the most relatively favorable. The interaction of *POST* and *HIGH_UNFAV* captures the incremental change in tax avoidance among firms with relatively unfavorable settlements compared to firms with relatively favorable settlements. I define the control variables, typically found in the tax avoidance literature, in the Appendix and include industry and year fixed effects. I winsorize all firm-specific, continuous control variables at 1 and 99 percent and truncate cash ETR at 0 and 1, consistent with prior literature (Dyreng et al. 2008).

I expect β_1 to be negative and significant if, consistent with H1a, firms with relatively favorable large tax settlements subsequently increase tax avoidance. I expect the sum of β_1 and β_3 to be positive and significant if, consistent with H1b, firms with relatively unfavorable large tax settlements subsequently decrease tax avoidance.

4.2 Sample Selection

To implement my difference-in-difference design, I begin with the 1,912 observations for which I can measure tax settlement favorability. I delete 638 firm-years whose favorability

measure falls in the middle tercile so that I am comparing observations with relatively favorable to relatively unfavorable settlements.¹⁸ I delete 231 observations with large settlements in 2007 or 2015 since my design requires available UTB data in years $t-1$ and $t+1$. Further, I delete 735 observations in which the firm has another large settlement within two years of the measurement year.

This procedure leaves 308 testable observations, which results in 616 potential observations in the year before or after a large settlement that I use to evaluate changes in tax avoidance. Of these potential observations, there are 18 observations missing in Compustat. I delete 76 loss firm-years for which cash effective tax rates are not calculable and another 65 firm-years missing data to compute control variables. Finally, requiring a balanced panel eliminates another 77 observations and provides for a final sample of 380 firm-years. Table 3 documents this sample selection procedure. I discuss alternate methodologies that overcome my limited sample size in robustness tests.

[INSERT TABLE 3]

4.3 Empirical results

I present summary statistics of firms with relatively favorable (lowest tercile of *UNFAV*) and unfavorable (highest tercile of *UNFAV*) settlements before and after the examination resolution in Table 4. The table indicates that the mean (median) cash ETR for firms with relatively favorable large settlements significantly decreases from 29.6 (26.1) percent before the large settlement to 23.6 (20.8) percent following the settlement. Meanwhile, there does not appear to be any statistically significant change in the tax avoidance behavior among firms with

¹⁸ In untabulated analysis, I define *HIGH_UNFAV* as those observations with an *UNFAV* residual from Model 1 above zero so that I retain all observations with a calculable *UNFAV*. The magnitude and direction on the coefficient of my variables of interest in Model 2 are consistent under this specification, but are not statistically significant under conventional levels.

relatively unfavorable large settlements. The table suggests few differences between firms with favorable and unfavorable settlements either before or after the settlement. In particular, tax avoidance prior to the settlement is not significantly different between the two groups. Moreover, the level of UTBs are similar for firms with favorable and unfavorable settlements, suggesting financial reporting considerations to systematically accrue more or fewer reserves are not driving my classification scheme.¹⁹ Finally, it does not appear as though any firm characteristics, aside from the cumulative UTBs at the beginning of the year, change following the large settlement.

[INSERT TABLE 4]

Table 5 presents results from Model 2 depicting the effect of favorable and unfavorable large settlements on subsequent tax avoidance. The coefficient on *POST* is negative and statistically significant ($p < 0.05$), suggesting firms with relatively favorable tax settlements have cash ETRs 6.2 percent lower the year following the settlement than the year before the settlement. This finding is consistent with favorable settlements revising firms' perceptions of the tax authority's vigilance or the sustainability of their positions. Having prevailed in their most recent tax examination, these firms appear more willing to "push the envelope" and avoid more taxes in the subsequent period.

[INSERT TABLE 5]

Meanwhile, the coefficient on the interaction of *POST* and *HIGH_UNFAV* is positive and statistically significant, indicating that firms with relatively unfavorable settlements decrease tax avoidance compared to those with relatively favorable settlements.²⁰ The sum of *POST* and

¹⁹ I also verify that the level of UTBs are not statistically different at the beginning of the settlement year.

²⁰ One potential explanation for these results is that firms with relatively favorable tax settlements are more likely to make payments to the tax authority in the year prior to the formal settlement in order to avoid further interest and penalty payments and/or receive a refund in the year after the settlement. To alleviate concerns that timing of any settlement payments is driving my results, I substitute cash taxes paid with tax expense in the numerator of my tax avoidance variable. I continue to observe a statistically significant positive coefficient on the interaction term in this specification, suggesting tax settlement favorability has differential impacts on subsequent tax avoidance rather than

*POST*HIGH_UNFAV* is statistically insignificant, suggesting that firms with relatively unfavorable settlements do not subsequently change their tax avoidance.

To ascertain a possible mechanism through which firms with favorable settlements increase their tax avoidance, I hand-collect the decrease in firms' effective tax rates attributable to the domestic production activities deduction ("DPAD") in the year before and after a large settlement.²¹ Of the 380 observations in my sample, there are 96 with positive pretax domestic income that separately disclose DPAD in their effective tax rate reconciliation. In untabulated analysis, I observe that the DPAD tax benefit as a function domestic pretax income significantly increases among favorable settlement firms, while the change among unfavorable settlement firms is not statistically significant. This suggests that firms may learn through a favorable settlement that more of their activities could qualify for this tax benefit.²²

In an effort to explain why firms with unfavorable settlements do not appear to change their behavior, I consider whether they change their UTB accruals for current period positions following the relatively unfavorable settlement. Maintaining similar tax avoidance strategies on the tax return while accruing more UTBs for financial reporting purposes would enable these firms to still generate the immediate savings from tax avoidance and achieve some "bargaining space" in future examination negotiations, but avoid the adverse financial reporting consequences associated with under-reserving. To test this assertion, I substitute the net increase

just timing of settlement payment. The coefficient on *POST* in this specification is negative, but is only statistically significant using a one-tailed test.

²¹ This deduction is a function of the firm's net income derived from sales of property manufactured, produced, grown, or extracted within the United States.

²² Firms could also immediately increase tax avoidance by claiming additional qualified research expenditures for the R&D tax credit. Observing this behavior through the effective tax rate reconciliation is hindered, however, because of frequent expirations and retroactive reinstatements of the credit during my sample period, which distort the ability to make inferences as to the expenditures qualified in any given year. Additionally, firms could also increase their tax avoidance following a favorable settlement by increasing their income shifting to foreign affiliates. Using an approach similar to Collins et al. (1998), I only find limited evidence from my sample, however, that firms with favorable settlements increase their outbound income shifting relative to firms with unfavorable settlements.

in current year UTBs for current period positions, *CY_UTB*, as my dependent variable in Model 2.²³ In untabulated analysis, I do not observe any change in current year UTB accruals for current period positions for firms with relatively unfavorable settlements.²⁴ This result is inconsistent with a “bargaining space” strategy, which might suggest an increase in current year UTB accruals to compensate for the uncertain positions they continue to take. Further, I do not observe that relatively unfavorable settlement firms have higher financial constraints than relatively favorable settlement firms (untabulated), suggesting they are not maintaining similar levels of tax avoidance because of a greater need for internal funding.²⁵

This analysis suggests that unfavorable settlements do not appear to change firms’ perceptions of the tax authority’s vigilance or the sustainability of their tax avoidance strategies. One possible explanation is that the relatively unfavorable settlements in my sample pertain to non-recurring tax issues that are unlikely to lead to behavioral changes. For instance, Praxair recorded an incremental \$250 million charge in 2010 related to a settlement over tax credits generated by its Spanish subsidiaries prior to 2002. Since these credits do not appear to have been claimed in more recent years, Praxair’s tax avoidance behavior is less likely to change as a result of this settlement.²⁶

Another possible explanation is that because my measure of settlement favorability is relative to the sample and because firms typically over-accrue UTBs, some resolutions that fall in the highest tercile of my measure may not be adverse in absolute terms. For instance, in 2012, Nathan’s Famous Inc., a firm classified as having a relatively unfavorable resolution, settled an

²³ I also include *CASH_ETR* as an explanatory variable in this model, but it does not impact the results.

²⁴ I also do not observe any change in UTB accruals among firms with relatively favorable settlements, suggesting these firms avoid more taxes following the resolution, but do not perceive the positions they take to be more uncertain.

²⁵ I use the Altman (1968) Z-score and Kaplan and Zingales (1997) index to measure financial constraints, consistent with Edwards et al. (2016).

²⁶ Because firms do not typically disclose the nature of the tax issues settled in an examination, it is not feasible to ascertain the proportion of settlements in my sample that pertain to non-recurring items.

issue with New York City requiring a \$129,000 payment which had previously been accrued. Although this settlement may be unfavorable relative to other firms who forfeit less to the tax authority than the reserves they accrued, it may not necessarily revise the firm's expectations of the benefits derived from tax avoidance.

Lastly, firms may accrue additional UTBs based on information learned during the course of an examination prior to the final settlement. This activity potentially limits the unfavorable settlements I observe to those firms that were most adamant about the merits of their uncertain positions and most reluctant to accrue interest and penalties on those positions prior to settlement. Such obstinacy may manifest in maintaining similar tax planning strategies following an unfavorable settlement and explain the insignificant result I obtain among this group.

5. Additional Analysis and Robustness tests

5.1 Time trend of tax avoidance around large settlements

In my main analysis, I only look at one year before and after the settlement because a longer testing window would result in a smaller sample of firms that do not have additional settlements in the longer testing window. For instance, evaluating changes in tax avoidance over a three-year period restricts my sample to 86 settlement observations between 2010 and 2012 that do not have another large settlement in the surrounding six years.²⁷

As an alternate approach to evaluating a longer time-series, I retain observations with multiple settlements during a six-year window and only delete the surrounding firm-years in which the pre-settlement and post-settlement classifications are overlapping. To illustrate, if a firm reports settlements in 2009 and 2013, this approach would include 2007 and 2008 as pre-

²⁷ Using these settlements and applying the same sample selection criteria used in my primary analysis generates 274 firm-years to test my hypotheses. The inferences I draw with respect to favorable settlement firms from this smaller sample are similar to those using the one-year window; however, the positive coefficient on the interaction term in Model 2 is not statistically significant at conventional levels.

settlement observations and 2014 and 2015 as post-settlement observations. While this approach would increase the sample used in my hypothesized test from 380 to 1,675 observations, I choose not to use it in primary analysis because the pre-settlement observations may not pertain to the same examination as the post-settlement observations.

The larger number of observations over a longer time horizon does, however, allow me to present in Figure 1 the trend of cash ETRs for up to three years before and after a favorable or unfavorable settlement for a meaningful number of observations each year. I choose three years because DeBacker et al. (2015) note that the average observed interval between IRS audits is 2.7 years, such that cash ETRs beyond this period may reflect responses attributable to another examination. The figure reflects the cash ETR among firms with favorable settlements is consistently lower in the years after the settlement and this difference is statistically significant ($p < 0.05$ untabulated), supporting the results from my primary analysis. There is not as apparent a trend among firms with unfavorable settlements, consistent with the lack of observed change in tax avoidance in my primary analysis.²⁸

[INSERT FIGURE 1 HERE]

One concern, given that the cash ETR for favorable settlers peaks in the year before the settlement, is that these firms may be depositing tax payments in advance of a settlement to protect against higher interest and penalties. To alleviate concerns that such activity affects my inferences, I compare firms' tax avoidance two years prior to the settlement to the year after using my primary research design and sample selection procedure. The results from Model 2 of this modified specification (untabulated) are consistent with those presented in Table 5,

²⁸ The increase in tax avoidance among favorable settlement firms becomes less apparent when looking out up to five years before and after an examination, which may be because the information acquired becomes less relevant in more distant years. Further, there are fewer than 50 observations among favorable or unfavorable settlement firms in these more distant years, making inferences less generalizable.

supporting my inferences that firms with favorable settlements are indeed changing their behavior.

5.2 Tax settlement favorability and tax-related restatements

In the context of this study, relatively unfavorable settlements suggest firms did not sufficiently accrue UTBs for the settled positions, necessitating larger penalty and interest expense in the settlement year. This failure to adequately accrue UTBs, along with the associated interest and penalties, when the firm took the underlying position may be associated with a restatement of the tax account. For instance, Usana Health Sciences announced a restatement attributable to its tax account in 2009 stemming from a settlement with the IRS in which the tax authority disallowed deductions related to executive compensation under Section 162(m) of the Internal Revenue Code (“IRC”) in earlier years. This settlement resulted in an estimated additional \$4.4 million taxes due, plus \$0.8 million interest, that were not accounted for as part of the firm’s UTBs under FIN 48 and necessitated a restatement of the 2007 financial statements. Even if firms do not explicitly disclose a settlement as the reason for the restatement, the event may nevertheless alert them to tax accounting errors or reveal deficiencies within the tax department that manifest in unfavorable outcomes for both tax and financial reporting purposes.

To evaluate the association between tax settlement favorability and tax related restatements, I include *UNFAV* in the following model:

$$TAX_RESTATE_{i,t} = \beta_0 + \beta_1*UNFAV_{i,t} + \beta_2*SIZE_{i,t} + \beta_3*LEVERAGE_{i,t} + \beta_4*FOREIGN_{i,t} + \beta_5*LOG_SEG_{i,t} + \beta_6*NOL_{i,t} + \beta_7*BIGN_{i,t} + \beta_8*AUDITOR_CHANGE_{i,t} + \varepsilon \quad (3)$$

The dependent variable in Model 3 is equal to one if the firm announced a restatement in its tax account during the year of or year subsequent to the tax settlement and zero otherwise.²⁹ I also perform this test using restatement announcements in general as the dependent variable. I control for various factors expected to predict tax related restatement announcements (see Appendix for definitions).

I present summary statistics for the variables in Panel A of Table 6 using the sample derived from my initial sample selection presented in Table 1.³⁰ There are 38 firm-years that announce a tax related restatement during the large settlement year or subsequent year, and 199 that announce a restatement in general. By construction, the mean of *UNFAV* is 0, indicating a tax settlement that is neither favorable nor unfavorable relative to the sample. The distribution of *UNFAV* appears evenly spread, with an interquartile range of -0.0003 and 0.0003.

[INSERT TABLE 6]

The first column of Table 6, Panel B provides evidence that relatively unfavorable tax settlements increase the likelihood of a tax related restatement announcement. Economically, moving from the 25th to 75th percentile of *UNFAV* results in a 23.7 percent increased likelihood of a tax related restatement announcement.³¹ The second column indicates there is no significant relation between *UNFAV* and restatement announcements in general. In untabulated tests, I also do not observe a significant relation between *UNFAV* and tax related restatement announcements

²⁹ A tax related restatement announcement occurs when a firm either files an 8-K informing investors that a prior period's financials should not be relied upon or amends the cumulative effect of the error in its current period financials, in accordance with SEC Staff Accounting Bulletin No. 108. I use Audit Analytics' category key '18' to identify tax-related restatements, which consist of errors or irregularities in approach, understanding, or calculation associated with various forms of tax obligations or benefits.

³⁰ I drop firm-years in 2015 since data is not available to observe whether a restatement was subsequently announced, as well as firms in industries that do not have any tax related restatement announcements, as these observations cannot be included in a multivariate regression with industry fixed effects. This step reduces the sample to 1,493 observations for this test.

³¹ This percentage is derived by taking the percentage change in predicted probabilities of a tax related restatement when *UNFAV* moves from the 25th to 75th percentile (-0.0003 to 0.0003). The predicted probability increases from 0.0219 to 0.0271.

in a sample of small (i.e. below the median) tax settlement firms. This result suggests that unfavorable outcomes with the tax authority are linked to adverse financial reporting outcomes, either directly because of the economic magnitude of the settlement or indirectly through revelations of deficiencies within a firm's tax department.³²

5.3 Cross-sectional analysis

My main result suggests that firms revise their expectations regarding the sustainability of their tax avoidance strategies following a favorable settlement in a way that encourages additional tax avoidance. To test the credibility of this interpretation, I consider two cross-sections which should provide varying opportunities for learning through the settlement- firm size and the use of an industry specialist auditor. Because large firms are audited more frequently than small firms (e.g. Hoopes et al. 2012) and therefore have more frequent interaction with the tax authority, I expect these firms learn less from a settlement than small firms. Moreover, firms that engage an industry specialist auditor have access to an expert resource familiar with the tax authority's treatment of industry-specific issues, and hence are less likely to learn new information from a settlement than firms engaging a non-industry specialist auditor. I partition the sample based on a total asset threshold of \$5 billion to distinguish large and small firms and define an industry specialist as the audit firm with the largest market share in a 2-digit SIC code by assets.³³ Table 7 presents the results of this analysis.

[INSERT TABLE 7 HERE]

³² I am not able to verify that settlements are the explicit cause for the majority of tax restatements in my sample, though it is possible firms choose not to disclose the tax authority's examination as the information source that led to the discovery of errors in the firm's reporting.

³³ The IRS statistics of income reports 55.3 of firms with assets above the \$5 billion threshold were audited in 2014, whereas only 11 percent of firms with assets below this threshold were audited (IRS 2014). The results are similar if I partition the sample at the sample mean or median. The industry specialist results are similar when defining industry specialist at the city level using audit fees as a proxy for market share. I do not consider the tax specific specialist (e.g. McGuire et al. 2012) because the audit firm will still likely communicate its knowledge of the tax authority's vigilance when auditing the client's tax account even if it is not providing tax services. Moreover, requiring firms in my sample to purchase tax services from the auditor would lead to further sample attrition.

The first and second columns present the results for the small and large firms respectively. The results from my primary analysis are concentrated among small firms, suggesting that when these firms have favorable settlements, their inferences regarding the sustainability of their tax avoidance strategies changes more than large firms with favorable settlements. The third and fourth columns present the results for firms engaging a non-industry specialist auditor and industry specialist auditor respectively. The increase in tax avoidance among favorable settlement firms is concentrated among firms that do not engage an industry specialist, consistent with these firms learning more about the sustainability of their positions from a settlement. Overall, these tests support my interpretation that firms revise their expectations of the benefits derived from tax avoidance following favorable settlements in a way that affects their subsequent behavior.

5.4 Robustness tests

To evaluate whether the change in tax avoidance stems from tax settlement favorability as opposed to smaller interest and penalties unrelated to tax settlements, I run Model 1 on a sample of firms regardless of whether they had a large tax settlement (i.e. above the median among settlement firms) and derive an *UNFAV* measure from this larger sample. I then partition this variable into terciles, consistent with my primary research design, and utilize the resulting indicator variables in three unique difference-in-difference specifications to evaluate changes in tax avoidance around the measurement year.

In the first specification, I limit the sample to firm-years without large settlements and include those with *UNFAV* values in the top or bottom tercile. I regress a firm's cash ETR on a *POST* indicator equal to one for observations the year following the measurement year and zero for observations the year before, a *HIGH_UNFAV* indicator, and the interaction of the two terms.

This approach mirrors the one I employ in my primary test for large settlement firms and I include the same set of controls from Model 2. The first column of Table 8 presents the results of this specification. The coefficients on *POST* and *HIGH_UNFAV*, as well as the interaction of the two terms are all statistically insignificant, suggesting that the residual interest and penalties among firms without large tax settlements do not affect subsequent tax avoidance.

[INSERT TABLE 8]

In the second specification, I limit the sample to firm-years in the lowest tercile of *UNFAV* and include those observations with and without large settlements. I create an indicator variable, *LARGE_SETTLER*, equal to one for firm-years with a large settlement and zero otherwise. I then regress a firm's cash ETR on *POST*, *LARGE_SETTLER*, and the interaction of these two terms. The second column of Table 8 presents the results of this specification. The coefficient on *POST* is insignificant, while the interaction of *POST* and *LARGE_SETTLER* is negative and statistically significant ($p < 0.05$).³⁴ This result suggests that the increase in tax avoidance among firm-years with smaller residual interest and penalties is confined to firm-years whose residual can be attributed to large tax settlements.

In the third specification, I limit the sample to firm-years in the highest tercile of *UNFAV* and include those observations with and without large settlements. I then regress a firm's cash ETR on *POST*, *LARGE_SETTLER*, and the interaction of these two terms. The third column of Table 8 presents the results of this specification. The coefficients on *POST*, *LARGE_SETTLER*, and the interaction of these terms are statistically insignificant, suggesting that excess interest and penalties do not lead to changes in tax avoidance, regardless of whether the higher residual can be attributed to large settlements.

³⁴ The sum of *POST* and *LARGE_SETTLER* in this specification is statistically significant using a one-tailed test.

To demonstrate the results from my primary research design are not a function of evaluating tax settlement favorability by terciles, I replace the *HIGH_UNFAV* indicator variable from Model 2 with a continuous rank measure of tax settlement favorability (scaled from 0 to 1) among the full sample of firms.³⁵ In untabulated analysis, I continue to observe a significantly negative coefficient on *POST* ($p < 0.05$) and a significantly positive coefficient on the interaction of *POST* and the ranked measure of *UNFAV* ($p < 0.10$).

To further test whether large tax settlement favorability differentially impacts subsequent tax avoidance, I regress the cash ETR on the ranked measure of *UNFAV* in just the year subsequent to the large settlement. Foregoing the strict parameters of the difference-in-difference design allows for an expanded sample of 901 observations in this specification.³⁶ In untabulated analysis, the coefficient on the ranked measure of *UNFAV* is positive and statistically significant ($p < 0.05$), providing further support that the favorability of a large tax settlement impacts a firm's subsequent tax avoidance.

6. Conclusion

This study develops a measure of large tax settlement favorability and considers how firms change their tax avoidance following this event. My results suggest that firms with relatively favorable large settlements subsequently increase their tax avoidance, whereas firms with relatively unfavorable large settlements do not change their behavior. The increase in tax avoidance among favorable settlers is concentrated among small firms and firms that do not

³⁵ I continue to maintain my other sample restrictions in this analysis. This procedure generates a sample of 564 firm-years in which I test for changes in tax avoidance. The statistical significance on my coefficients is robust to using an unranked measure of *UNFAV*.

³⁶ Specifically, I relax the requirement that the firm not have any additional large settlements within two years of the measurement year and instead only require that it does not have another large settlement in the subsequent year. I include the same controls from Model 2. I also implement this model including a lagged cash ETR variable to control for tax avoidance prior to the settlement. This control variable is not significantly correlated with *UNFAV*, indicating that firms with more unfavorable settlements do not have higher levels of tax avoidance prior to the settlement.

engage an industry specialist auditor – two groups that stand to learn more from a settlement since their interaction with the tax authority is less frequent and their access to a well-informed external advisor may be more limited, respectively. I modify the difference-in-difference design in various ways to ensure my inferences are robust to the strict sample specifications I set forth in the main analysis. In additional analysis, I observe a positive association between the unfavorability of a tax settlement and the likelihood of a tax related restatement announcement, highlighting a link between adverse outcomes with the tax authority and financial reporting.

Overall, this study provides context to the situations in which large settlements influence subsequent tax avoidance. Relatively favorable resolutions appear to either alter firms' perception of the tax authority's vigilance or the sustainability of their own positions, both of which can lead to increases in tax avoidance. My findings suggest the tax authority should closely monitor firms that retain significant benefits from a recent examination.

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Appendix

Variable Definitions

Tax settlement favorability regression variables

<i>INTPEN</i> =	Interest and penalties accrued during the year on UTBs (TXTUBXINTIS), scaled by beginning of year assets (AT)
<i>CY_UTB</i> =	Net UTBs claimed on current year positions (TXTUBPOSINC-TXTUBPOSDEC), scaled by beginning of year assets
<i>OPEN_UTB</i> =	UTBs accrued as of the beginning of the year (TXTUBBEGIN) less UTBs resolved during the year (TXTUBPOSPDEC+ TXTUBSETTLE+ TXTUBSOFLIMIT), scaled by beginning of year assets
<i>SOL_UTB</i> =	UTBs that reverse as a result of a lapse in the statute of limitations (TXTUBSOFLIMIT), scaled by beginning of year assets

Variable included in tax avoidance regression

<i>CASH_ETR</i> =	Cash taxes paid (TXPD) scaled by pretax income less special items (PI-SPI), winsorized at 0 and 1
<i>UNFAV</i> =	Residual from Model 1 tax favorability regression
<i>HIGH_UNFAV</i> =	Indicator variable equal to one if <i>UNFAV</i> is in the top tercile, and zero otherwise
<i>LARGE_SETTLER</i> =	Indicator variable equal to one for firm years with a large tax settlement, and zero otherwise
<i>SIZE</i> =	Natural logarithm of total assets
<i>LEVERAGE</i> =	Debt in long-term liabilities (DLTT) scaled by total assets
<i>MTB</i> =	Market value of equity (PRCC_F*CSHO) divided by book value of equity (SEQ)
<i>NOL</i> =	Indicator variable equal to one if the firm has tax loss carryforwards (TLCF), and zero otherwise
<i>RD_INTENSITY</i> =	R&D spending (XRD), scaled by beginning of year total assets
<i>CAPX</i> =	Capital expenditures (CAPX), scaled by beginning of year total assets
<i>ROA</i> =	Return on assets, defined as pretax income less special items (PI-SPI), divided by total assets
<i>FOREIGN_INC</i> =	Foreign income scaled by beginning of year total assets

<i>DACC</i> =	Discretionary accruals using the Modified-Jones method
<i>BEG_UTB</i> =	UTBs accrued as of the beginning of the year, scaled by beginning of year total assets
<i>BIG4</i> =	Indicator variable equal to one if the firm engages a Big4 auditor (AU<=8), and zero otherwise
<i>IO_PCT</i> =	Percentage of shares held by institutional investors

Restatement regression variables

<i>TAX_RESTATE</i> =	Indicator variable equal to one if the firm announced a restatement during the year of or year following the large tax settlement relating to its tax account, and zero otherwise
<i>RESTATE</i> =	Indicator variable equal to one if the firm announced a restatement during the year of or year following the large tax settlement, and zero otherwise
<i>FOREIGN</i> =	Indicator variable equal to one if the firm has foreign operations (PIFO ne 0), and zero otherwise
<i>LOG_SEG</i> =	Natural logarithm of total business and geographic segments
<i>AUDITOR_CHANGE</i> =	Indicator variable equal to one if the firm changes auditors during the year, and zero otherwise

Figure 1

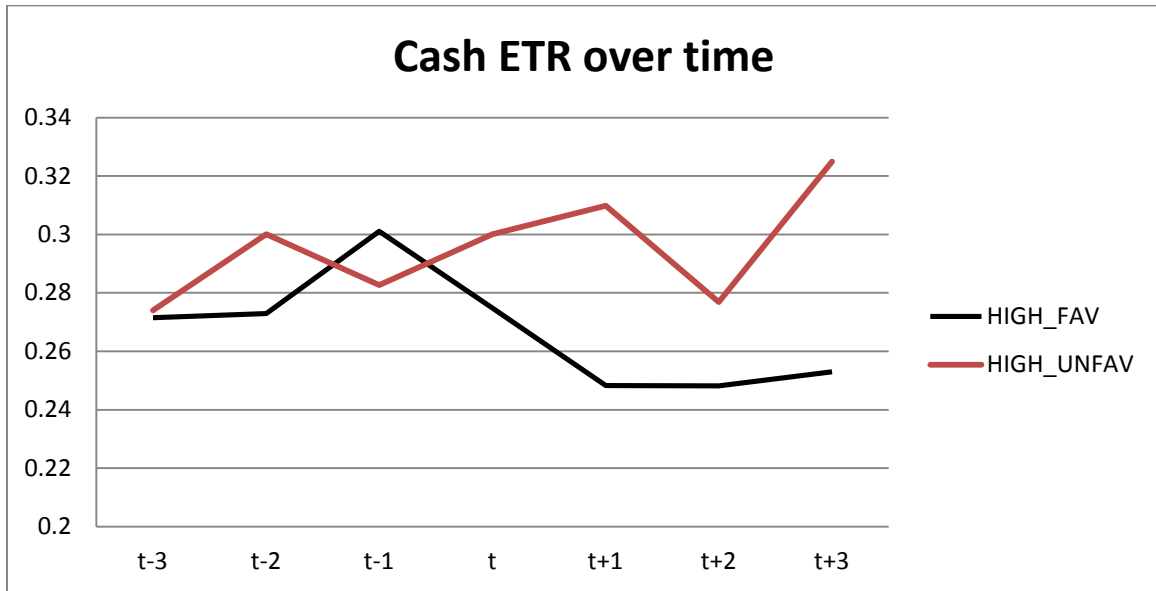


Figure 1 presents the average cash ETR of favorable (HIGH_FAV) and unfavorable (HIGH_UNFAV) settlement firms beginning three years before the settlement through three years after the settlement.

Table 1
Sample selection for large tax settlement favorability measure

Observations with a settlement disclosed in UTB tabular reconciliation between 2007-2015	7,021
Less: observations in regulated or financial industries	(602)
Less: observations missing interest and penalty expense	(2,360)
Less: observations whose settlements are below the sample median	(2,027)
Less: truncated observations whose outcome or explanatory variables fall in the top or bottom percentile	(120)
Large Settlement Observations	1,912

Table 2
Model to derive large tax settlement favorability

Panel A: Summary statistics

	Mean	Std	p25	p50	p75
<i>INTPEN</i>	0.0002	0.0009	-0.0001	0.0001	0.0004
<i>CY_UTB</i>	0.0014	0.0021	0.0001	0.0006	0.0017
<i>OPEN_UTB</i>	0.0070	0.0081	0.0016	0.0044	0.0096
<i>SOL_UTB</i>	0.0005	0.0009	0.0000	0.0002	0.0006

Panel B: Multivariate regression

VARIABLES	Y=INTPEN
<i>CY_UTB</i>	0.029** (2.22)
<i>OPEN_UTB</i>	0.012** (2.26)
<i>SOL_UTB</i>	-0.141*** (-4.26)
<i>CONSTANT</i>	0.001*** (4.45)
Observations	1,912
Fixed Effects	Ind&Yr
Clustered SE	Firm
Adjusted R ²	0.0799

Notes: All variables are defined in the Appendix and all continuous variables have been truncated at the 1st and 99th percentiles. In Panel B, I estimate an OLS regression; t-statistics are presented below each coefficient. ***, **, and * indicated significance at the 1%, 5%, and 10% level respectively using two-tailed p-values.

Table 3
Sample selection to measure changes in tax avoidance

Observations with identifiable large tax settlement favorability	1,912
Less: observations in middle tercile of tax settlement favorability	(638)
Less: observations in 2007 or 2015	(231)
Less: observations with another large settlement within two years	(735)
Observations used to test change in tax reporting	308
	x2
Total potential observations in years before and after large settlement	616
Less: observations missing from Compustat	(18)
Less: loss-firm observations	(76)
Less: observations missing control variables	(65)
Less: firms without observations both before and after the large settlement	(77)
Total Observations	380

Table 4
Summary statistics

	FAVORABLE							UNFAVORABLE							FAV VS. UNFAV			
	Pre (N=94)			Post (N=94)				Diff in Means (p-value)	Pre (N=96)			Post (N=96)				Diff in Means (p-value)	Pre	Post
	Mean	Std	Median	Mean	Std	Median	Mean		Std	Median	Mean	Std	Median	Mean	Std		Median	Diff in Means (p-value)
<i>CASH_ETR</i>	0.296	0.224	0.261	0.236	0.206	0.208	0.058	0.270	0.186	0.246	0.264	0.185	0.251	0.811	0.383	0.339		
<i>SIZE</i>	7.870	1.775	7.790	7.981	1.751	7.717	0.667	7.692	1.625	7.594	7.794	1.614	7.617	0.661	0.471	0.446		
<i>LEVERAGE</i>	0.192	0.174	0.167	0.185	0.162	0.172	0.771	0.161	0.143	0.147	0.168	0.151	0.156	0.748	0.174	0.438		
<i>MTB</i>	3.338	3.399	2.284	3.723	3.694	2.640	0.458	3.642	4.020	2.508	4.208	4.971	2.858	0.387	0.575	0.446		
<i>NOL</i>	0.489	0.503	0.000	0.596	0.493	1.000	0.145	0.583	0.496	1.000	0.688	0.466	1.000	0.135	0.196	0.189		
<i>RD_INTENSITY</i>	0.020	0.030	0.004	0.019	0.028	0.004	0.766	0.032	0.050	0.007	0.033	0.052	0.007	0.954	0.046	0.024		
<i>CAPX</i>	0.050	0.043	0.037	0.044	0.039	0.034	0.379	0.044	0.044	0.026	0.046	0.045	0.034	0.764	0.385	0.776		
<i>ROA</i>	0.102	0.075	0.081	0.102	0.069	0.085	0.973	0.121	0.085	0.095	0.124	0.085	0.101	0.813	0.110	0.052		
<i>FOREIGN_INC</i>	0.034	0.051	0.016	0.033	0.058	0.016	0.946	0.040	0.048	0.023	0.042	0.046	0.034	0.760	0.380	0.242		
<i>DACC</i>	-0.009	0.054	-0.006	-0.007	0.058	-0.012	0.865	-0.002	0.061	-0.009	0.003	0.060	-0.006	0.578	0.449	0.252		
<i>BEG_UTB</i>	0.016	0.014	0.012	0.012	0.011	0.009	0.024	0.017	0.015	0.011	0.013	0.014	0.009	0.136	0.838	0.414		
<i>BIG4</i>	0.936	0.246	1.000	0.936	0.246	1.000	1.000	0.917	0.278	1.000	0.927	0.261	1.000	0.789	0.609	0.805		
<i>IO_PCT</i>	0.548	0.341	0.687	0.526	0.334	0.638	0.656	0.597	0.368	0.745	0.578	0.354	0.725	0.724	0.347	0.299		

Notes: All variables are defined in the Appendix and all continuous variables have been winsorized at the 1st and 99th percentiles, except cash ETR, which is bounded at 0 and 1.

Table 5
Effect of favorable versus unfavorable large tax settlements on tax avoidance

VARIABLES	Y=CASH_ETR
<i>POST</i>	-0.062** (-2.25)
<i>HIGH_UNFAV</i>	-0.028 (-1.00)
<i>POST*HIGH_UNFAV</i>	0.064* (1.66)
<i>SIZE</i>	-0.015** (-2.03)
<i>LEVERAGE</i>	-0.060 (-0.63)
<i>MTB</i>	0.006 (1.53)
<i>NOL</i>	-0.006 (-0.28)
<i>RD_INTENSITY</i>	-0.589** (-2.23)
<i>CAPX</i>	-0.533** (-2.00)
<i>ROA</i>	-0.169 (-0.90)
<i>FOREIGN_INC</i>	-0.505** (-2.37)
<i>DACC</i>	-0.278 (-1.39)
<i>BEG_UTB</i>	-2.153*** (-2.95)
<i>BIG4</i>	0.057 (1.31)
<i>IO_PCT</i>	-0.044 (-1.16)
<i>CONSTANT</i>	0.553*** (5.20)
<i>POST + POST*HIGH_UNFAV</i> (F-statistic)	0.02 (0.01)
Observations	380
Fixed Effects	Ind&Yr
Clustered SE	Firm
Adjusted R ²	0.137

Notes: All variables are defined in the Appendix and all continuous variables have been winsorized at the 1st and 99th percentiles, except cash ETR which is bound between 0 and 1. T-statistics are presented below each coefficient. ***, **, and * indicated significance at the 1%, 5%, and 10% level respectively using two-tailed p-values.

Table 6
Large tax settlement favorability and tax related restatement announcements

Panel A: Summary statistics

	Mean	Std	p25	p50	p75
<i>TAX_RESTATE</i>	0.0255	0.1575	0.0000	0.0000	0.0000
<i>RESTATEMENT</i>	0.1333	0.3400	0.0000	0.0000	0.0000
<i>UNFAV</i>	0.0000	0.0008	-0.0003	0.0000	0.0003
<i>SIZE</i>	7.9466	1.6894	6.7300	7.9287	9.0555
<i>LEVERAGE</i>	0.1952	0.1690	0.0253	0.1750	0.3082
<i>FOREIGN</i>	0.7468	0.4350	0.0000	1.0000	1.0000
<i>LOG_SEG</i>	1.8636	0.6885	1.3863	1.9459	2.3979
<i>NOL</i>	0.6068	0.4886	0.0000	1.0000	1.0000
<i>BIGN</i>	0.9270	0.2602	1.0000	1.0000	1.0000
<i>AUDITOR_CHANGE</i>	0.0717	0.2580	0.0000	0.0000	0.0000

Panel B: Multivariate regression

VARIABLES	Y=TAX_RESTATE	Y=RESTATE
<i>UNFAV</i>	382.131* (1.93)	-49.268 (-0.51)
<i>SIZE</i>	-0.271** (-1.97)	-0.170*** (-2.75)
<i>LEVERAGE</i>	1.898 (1.63)	1.144** (2.39)
<i>FOREIGN</i>	-0.076 (-0.14)	-0.519** (-2.19)
<i>LOG_SEG</i>	1.325*** (4.58)	0.393** (2.36)
<i>NOL</i>	0.239 (0.56)	0.137 (0.76)
<i>BIGN</i>	0.358 (0.46)	1.200*** (2.60)
<i>AUDITOR_CHANGE</i>	0.574 (0.95)	-0.332 (-0.99)
<i>CONSTANT</i>	-6.362*** (-3.14)	-2.151*** (-2.71)
Observations	1,493	1,493
Fixed Effects	Ind&Yr	Ind&Yr
Clustered SE	Firm	Firm
Pseudo R ²	0.126	0.0481

Notes: All variables are defined in the Appendix and all continuous variables have been truncated at the 1st and 99th percentiles. In Panel B, I estimate an logistic regression; z-statistics are presented below each coefficient. ***, **, and * indicated significance at the 1%, 5%, and 10% level respectively using two-tailed p-values.

Table 7
Cross-sectional effect of favorable versus unfavorable large tax settlements on tax avoidance

VARIABLES	(1)	(2)	(3)	(4)
	< \$5B Assets Y=CASH_ETR	>\$5B Assets Y=CASH_ETR	Non- specialist auditor Y=CASH_ETR	Specialist auditor Y=CASH_ETR
<i>POST</i>	-0.095*** (-2.63)	0.037 (1.18)	-0.079** (-2.46)	-0.013 (-0.26)
<i>HIGH_UNFAV</i>	-0.071** (-2.07)	0.068 (1.16)	-0.038 (-1.05)	0.002 (0.04)
<i>POST*HIGH_UNFAV</i>	0.124** (2.36)	-0.079 (-1.24)	0.084* (1.78)	-0.002 (-0.03)
<i>SIZE</i>	-0.007 (-0.44)	-0.003 (-0.22)	-0.015 (-1.45)	-0.019* (-1.91)
<i>LEVERAGE</i>	-0.159 (-1.30)	0.008 (0.06)	-0.099 (-0.88)	0.076 (0.40)
<i>MTB</i>	0.012*** (2.64)	0.005 (0.55)	0.006 (1.33)	-0.001 (-0.08)
<i>NOL</i>	-0.003 (-0.11)	-0.024 (-0.76)	0.011 (0.39)	-0.035 (-0.86)
<i>RD_INTENSITY</i>	-0.472 (-1.31)	-0.337 (-0.88)	-0.741** (-2.15)	0.562 (0.82)
<i>CAPX</i>	-0.589* (-1.88)	0.083 (0.18)	-0.563* (-1.79)	-0.934 (-1.66)
<i>ROA</i>	-0.390 (-1.55)	0.023 (0.06)	-0.174 (-0.76)	-0.409 (-0.98)
<i>FOREIGN_INC</i>	-0.447* (-1.76)	-0.169 (-0.36)	-0.485* (-1.72)	-0.044 (-0.11)
<i>DACC</i>	-0.322 (-1.39)	-0.079 (-0.19)	-0.398* (-1.66)	0.070 (0.24)
<i>BEG_UTB</i>	-3.275*** (-3.23)	-2.148 (-1.52)	-2.550*** (-2.76)	-3.344** (-2.31)
<i>BIG4</i>	0.045 (0.75)	0.210** (2.14)	0.065 (1.26)	
<i>IO_PCT</i>	-0.084* (-1.89)	0.158* (1.81)	-0.048 (-1.03)	-0.093 (-1.53)
<i>CONSTANT</i>	0.540*** (3.43)	0.250 (0.80)	0.606*** (4.70)	0.510*** (3.51)
<i>POST + POST*HIGH_UNFAV (F-statistic)</i>	0.027 (0.67)	-0.042 (0.72)	0.005 (0.02)	-0.015 (0.07)
Observations	256	124	266	114
Fixed Effects	Ind&Yr	Ind&Yr	Ind&Yr	Ind&Yr

Clustered SE	Firm	Firm	Firm	Firm
Adjusted R ²	0.0953	0.288	0.156	0.0481

Notes: All variables are defined in the Appendix and all continuous variables have been winsorized at the 1st and 99th percentiles, except cash ETR which is bound between 0 and 1. T-statistics are presented below each coefficient. ***, **, and * indicated significance at the 1%, 5%, and 10% level respectively using two-tailed p-values.

Table 8
Effect of large settlements versus non-large settlements on tax avoidance

VARIABLES	(1) <i>LARGE_SETTLER=0</i> Y=CASH_ETR	(2) <i>HIGH_UNFAV=0</i> Y=CASH_ETR	(3) <i>HIGH_UNFAV=1</i> Y=CASH_ETR
<i>POST</i>	0.034 (1.57)	0.030 (1.32)	0.026 (1.28)
<i>HIGH_UNFAV</i>	0.027 (1.26)		
<i>LARGE_SETTLER</i>		0.040 (1.49)	0.003 (0.14)
<i>POST*HIGH_UNFAV</i>	-0.010 (-0.38)		
<i>POST*LARGE_SETTLER</i>		-0.074** (-2.24)	-0.011 (-0.35)
<i>SIZE</i>	-0.010* (-1.71)	-0.020*** (-3.09)	-0.009 (-1.32)
<i>LEVERAGE</i>	-0.009 (-0.12)	-0.066 (-0.76)	0.064 (0.72)
<i>MTB</i>	-0.001 (-0.35)	-0.002 (-0.54)	0.002 (0.61)
<i>NOL</i>	-0.034* (-1.95)	-0.017 (-0.89)	-0.020 (-1.03)
<i>RD_INTENSITY</i>	-0.375* (-1.92)	-0.656*** (-2.87)	-0.235 (-0.93)
<i>CAPX</i>	-0.207 (-1.41)	-0.313* (-1.84)	-0.093 (-0.45)
<i>ROA</i>	-0.420*** (-2.73)	-0.556*** (-2.76)	-0.222 (-1.30)
<i>FOREIGN_INC</i>	0.181 (0.99)	0.205 (1.04)	-0.086 (-0.40)
<i>DACC</i>	0.173 (1.43)	0.042 (0.29)	0.118 (0.81)
<i>BEG_UTB</i>	-0.853* (-1.83)	-0.155 (-0.23)	-1.730*** (-3.40)
<i>BIG4</i>	0.007 (0.22)	0.006 (0.17)	0.041 (0.98)
<i>IO_PCT</i>	-0.029 (-1.07)	-0.025 (-0.73)	-0.028 (-0.97)
<i>CONSTANT</i>	0.463*** (6.16)	0.575*** (7.20)	0.427*** (4.79)
<i>POST + POST*HIGH_UNFAV</i> (F-statistic)	0.024 (1.42)		

<i>POST+ POST*LARGE_SETTLER</i>		-0.044	0.015
(F-statistic)		(2.35)	(0.28)
Observations	1,016	706	708
Fixed Effects	Ind&Yr	Ind&Yr	Ind&Yr
Clustered SE	Firm	Firm	Firm
Adjusted R ²	0.0386	0.0560	0.0314

Notes: All variables are defined in the Appendix and all continuous variables have been winsorized at the 1st and 99th percentiles, except cash ETR which is bound between 0 and 1. T-statistics are presented below each coefficient. ***, **, and * indicated significance at the 1%, 5%, and 10% level respectively using two-tailed p-values.