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Assessing the role of losses in uncertain tax planning

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Abstract

Prior literature has provided substantial evidence of the determinants of tax planning choices but primarily in the context of profitable firms, often citing a lack of incentives for loss firms to pursue tax planning. To understand the role of losses in uncertain tax planning, this article employs an explorative approach that allows for non-linearities in the distribution between pre-tax profitability and uncertain tax planning. Specifically, the results indicate that uncertain tax choices are not linear across the spectrum of profit and loss firms but are increasing in profits and losses. The findings extend prior literature on loss firms, in particular.

Keywords: loss firms, tax uncertainty, tax planning, tax avoidance

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1. INTRODUCTION

The construct of tax planning through uncertain tax choices has been an area of interest for both accounting researchers as well as regulators and standard-setters for well over a decade. As such, prior accounting literature has deeply explored the relation between uncertain tax planning and many firm characteristics, largely with respect to only firms with positive pre-tax income (Henry & Sansing, 2018).[1] The exclusion of loss firms from prior studies has often been attributed to two main explanations. First, the exclusion has been a practical one in that some effective tax rate-based measures of tax planning are difficult to interpret for loss firms. Second, prior literature has cited conventional wisdom that because loss firms often cannot monetise tax planning immediately, the incentives for such choices are lower (Scholes et al., 2015). Despite the lack of evidence on the tax planning choices of loss firms, particularly uncertain tax choices, recent work shows consistent evidence that in profitable years, firms use tax attributes accumulated in loss years to reduce their tax liability (Drake, Hamilton & Lusch, 2020; Van der Geest & Jacob, 2020; Christensen, Kenchington & Laux, 2022). While these studies have shown that firms with accrued losses monetise the accrued tax benefits of those losses, this line of work has not considered how loss firms choose uncertain tax planning and whether the conventional wisdom holds for loss firms specifically. This question is particularly important given concerns by regulators that loss firms may pursue more uncertain tax choices and because loss firms are often examined less frequently by tax authorities (Organisation for Economic Co-operation and Development (OECD), 2011; Henry & Sansing, 2018; Internal Revenue Service (IRS), 2021).[2] In addition, because loss firms must often wait to monetise uncertain tax planning, prior work implies that loss firms may need to pursue more uncertain tax planning to achieve the same expected value of tax planning (Dyreng, Lewellen & Lindsey, 2018).

This article examines the role of losses in uncertain tax planning by investigating the relation between pre-tax operating income and uncertain tax choices for both profit and loss firms. This analysis provides a more complete picture by using a research approach that allows for non-linearities. The results indicate that uncertain tax choices are increasing in pre-tax profits, consistent with prior literature, but also show that uncertain tax choices are increasing in pre-tax losses, consistent with concerns from regulators and standard-setters. These findings underscore the distinct behaviour of profit and loss firms and highlight the non-linearity in the relation between pre-tax operating income and uncertain tax planning that is centred around zero pre-tax operating income.

With respect to profitable firms, prior literature has presented consistent reasoning and empirical evidence that the relation between pre-tax income and uncertain tax choices is positive, often including pre-tax income as a key control variable (Klassen, Lisowsky & Mescall, 2016). With respect to loss firms, prior literature is largely silent on the relation between pre-tax losses and uncertain tax choices. On one hand, loss firms do

[1] Prior literature has also referred to the construct of uncertain tax planning as tax aggressiveness.

[2] Specifically, Henry and Sansing (2018, p. 1043) quote the OECD by saying, 'This recent surge in corporate losses, and the economic importance of the firms generating them, has attracted the attention of governments concerned that growing losses could raise tax compliance risks "if companies turn to aggressive tax planning as a means of increasing or accelerating tax relief on their losses" (OECD, 2011)'. The notion that loss firms would pursue more uncertain tax planning relates to increasing the future benefit of the tax loss attributes.

not theoretically have as strong a set of incentives as profitable firms, since loss firms cannot always monetise uncertain tax choices immediately (Scholes et al., 2015). On the other hand, regulators have expressed concern that firms engage in more uncertain tax planning under losses (OECD, 2011; General Accounting Office (GAO), 1993), and prior literature suggests that tax loss carryovers are often associated with a greater risk appetite for firms (Langenmayr & Lester, 2018). In addition, De Waegenaere, Sansing and Wielhouwer (2021) provide theoretical evidence that the conventional wisdom in Scholes and co-authors (2015) does not always hold, but this study stops short of providing empirical insight into this prediction. Thus, the relation between uncertain tax choices and losses is an empirical question.

Because prior literature presents strong reasoning in both directions, this article employs a three-pronged exploratory approach to allow for non-linearities in the relation between uncertain tax choices and pre-tax profit/loss consistent with prior literature (Kim, Taylor & Verrecchia, 2021; Samuels, Taylor & Verrecchia, 2021). This approach validates the findings of prior work with respect to profitable firms and provides insights into the role of losses. Using a sample of 13,360 firm-year observations from 2007 to 2016, the article investigates this relation by examining disclosures of Uncertain Tax Benefits (UTBs), the most powerful measure of uncertain tax planning in samples that include both profit and loss firms (De Simone et al., 2020). Importantly, the UTB reserve must be based solely on a position's technical merits rather than expectations of profitability or enforcement, meaning that this measure captures the firm's *ex ante* expectations of the uncertainty of the position exclusive of other expectations about the future (Financial Accounting Standards Board (FASB), 2006). In the first prong of this approach, the article divides the sample into deciles based on pre-tax return on assets and plots the mean value of uncertain tax choices by decile. These figures indicate a non-linear relation between pre-tax income and uncertain tax choices and specifically show that uncertain tax choices are increasing in both profits and losses.

To confirm these findings using multivariate analyses, the article employs two additional approaches. First, the article estimates multivariate OLS regression models using both squared terms and a partitioning variable that allows the relation to vary based on the partition for loss firms. Next, the article estimates spline regression models that allow the relation on pre-tax income to vary in a piecewise linear fashion at a zero-income partition. Both of these analyses use a vector of control variables previously shown to be associated with uncertain tax planning as well as either industry and year or firm and year fixed effects. The results of these tests provide strong evidence that uncertain tax choices are non-linear in pre-tax income. Specifically, the findings indicate for profit firms, uncertain tax choices are increasing in income, which is consistent with the findings of prior literature that examines only profitable firms. However, in stark contrast, uncertain tax choices are also increasing in the amount of pre-tax operating loss incurred by the firm, which is a new result in the literature.[3]

The article also considers two cross-sectional hypotheses to investigate this result further. First, the article directly considers the assertions of regulators and standard-setters that the choice of more uncertain tax planning by loss firms may stem from a

[3] While this study does not directly examine the types of activities that loss firms choose with more uncertainty, anecdotal evidence from conversations with practitioners suggests that the additional uncertainty is often generated on the margin by a wide variety of choices (i.e., many marginal decisions lead to the overall greater uncertainty).

lower likelihood of compliance or enforcement. These analyses reveal that on average, loss firms reduce uncertain tax planning in response to a higher likelihood of enforcement, consistent with the assertions of regulators. In addition, the article examines how the presence of prior losses impacts the realisation of settlements with tax authorities. In order for the relation of uncertain tax choices increasing in pre-tax losses to ultimately matter, it is important to consider whether these positions are overturned upon examination or if they are a product of over-reserving for the same positions as profitable firms. If either of these explanations is true, there should be a significant relation between prior losses and current settlements such that these firms are unable to monetise the more uncertain tax choices made in loss years. Indeed, Christensen and co-authors (2022) illustrate that profitable firms using tax loss attributes in the current year do not choose more uncertain tax planning when generating profits. However, they do not examine how prior choices made by those firms manifest in different levels of settlements with tax authorities. The results of this analysis show no significant differences in the settlements with tax authorities between profitable firms with prior losses and other profitable firms. These findings imply that while loss firms pursue more uncertain tax planning, their choices do not unwind in the form of more settlements, suggesting that loss firms are often able to escape enforcement of many of these positions.

The article conducts a battery of robustness tests to support the main analyses. Specifically, the article uses alternative measures for both uncertain tax planning and income and find qualitatively similar results. These measures include different variables for uncertain tax planning based on other prior literature as well as using different scaling variables. Additionally, these analyses use measures of income based on both the firm's taxable income as well as the firm's pre-tax income net of special items. The article also considers underlying differences in profit and loss firms by both employing a propensity score matched sample as well as a control vector fully interacted with the indicator variable for loss firms. These tests support the notion that underlying differences in other firm characteristics of profit and loss firms are not driving the results. In final robustness analyses, the article eliminates outlier observations in bands to alleviate concern that the results are driven by big bath accounting issues under losses, and the article also finds no difference based on the persistence of losses.

Finally, the article examines the sources of the incremental uncertainty from the tax planning of loss firms. Anecdotal evidence and conversations with practitioners indicate the uncertain tax planning often occurs on the margin and largely depends on the context in which a firm operates. For example, a firm taking advantage of certain tax credits may take action to increase those credits while a firm with significant international activity could implement more discretion to accomplish the same ends. Specific tax cases have involved the disallowance of 'aggressive' tax losses. Specifically, in a 2014 court case, Wells Fargo was denied over USD 400 million in tax losses that lacked 'economic substance' (Reuters, 2014). Interestingly in this case, the Internal Revenue Service attempted to access Wells Fargo's workpapers on Uncertain Tax Positions, suggesting that the losses being utilised by Wells Fargo may contain too much uncertain tax planning (Robert & Spencer, 2013). To explore larger scale associations, the article interacts different activities with the variables of interest and finds that loss firms realise more tax uncertainty from research and development as well as foreign income.

This study offers three distinct contributions to both the academic accounting literature as well as to regulators and standard-setters. First, this article contributes to the extant

literature on tax planning. Prior literature has offered significant insight into the tax choices of profitable firms but has often excluded loss firms from analysis (Henry & Sansing, 2018). Since tax loss attributes comprise an economically significant way that firms avoid paying taxes (Drake et al., 2020; Christensen et al., 2022) and because loss firms constitute a substantial portion of the population, it is imperative to understand how firms make uncertain tax choices when incurring pre-tax losses. This study answers that question by showing that uncertain tax choices are increasing in income for profitable firms but increasing in losses for loss firms. Importantly, the results provide descriptive evidence that indicates the conventional wisdom that uncertain tax planning is increasing in pre-tax income does not hold for loss firms. These findings add to the understanding of uncertain tax planning to provide a more complete picture of the relation between income and tax choices for the full spectrum of firms by indicating a similar increasing relation in both profits and losses.

Second, this study contributes more broadly to recent work that studies non-linearities in accounting research. Recent studies have suggested that some relations assumed by prior literature to be linear are not, in fact, linear. For example, Kim and co-authors (2021) use a voluntary disclosure setting to document non-linearity when information and disclosure costs are determined jointly. Similarly, Samuels and co-authors (2021) study the setting of public scrutiny and misreporting to show a non-linear relation. In the banking industry, recent work by Basu, Vitanza and Wang (2020) highlights that an important assumption of linearity in loan loss provisioning is violated when examining the full sample of firms, and Beardsley, Imdieke and Omer (2021) consider non-linearities as they relate to audit quality. This line of work adds rich texture to the literature to provide more complete insight into different accounting issues. The present article is among few that consider this type of issue in a tax setting to identify an important non-linear relation with respect to uncertain tax planning, which furthers the understanding of how the common assumption of linearity might influence inferences. It is also among the few studies that consider how profit and loss firms behave differently in a broader context.

Third and finally, this research has significant implications for regulators and standard-setters. This work is particularly relevant at a time when enforcement resources are scarce and government agencies seek to reshape and increase funding for enforcement efforts (Tankersley & Rappeport, 2021). The results indicate that concerns of regulators that loss firms pursue more uncertain tax planning are not unfounded and that these firms appear to avoid future settlements. Importantly, the findings also document that an increased likelihood of enforcement attenuates the relation between losses and uncertain tax planning on average, suggesting that better enforcement may be effective in curbing this relation and providing timely, relevant insight into uncertain tax planning for regulators and standard setters.

2. BACKGROUND

2.1 Tax planning and tax uncertainty

A substantial amount of prior research has been dedicated to understanding the determinants and outcomes of a firm's tax planning activities.[4] This line of literature has investigated how agency issues, incentives, and conflicts of interest shape a firm's

[4] Hanlon and Heitzman (2010) and Wilde and Wilson (2018) review this literature.

tax choices as well as how these choices shape outcomes like the information environment, disclosure, and other features. Since the bulk of this literature relies on effective tax rates (ETRs) in all or in part to measure tax planning choices, these results are largely constrained to profitable firms. The exclusion of loss firms from these analyses has also been consistent with the framework presented by Scholes and co-authors (2015), which implies that loss firms often do not have cash benefits associated with tax planning.

Extending this work on general tax planning choices, recent studies highlight the fact that additional risk associated with uncertain tax choices can have adverse consequences for the firm. Hanlon, Maydew and Saavedra (2017) document that the adoption of projects with more tax uncertainty causes firms to hold more precautionary cash, and Jacob, Wentland and Wentland (2022) show that tax uncertainty can induce firms to delay or even forgo profitable investment decisions, potentially harming the value of the firm. Dyreng, Hanlon and Maydew (2019) link specific tax planning projects with tax uncertainty and find that firms engaging in more tax planning on average bear more uncertainty with respect to those positions. Their results also show that certain activities generate more uncertainty for the firm (e.g., more patent filings, tax haven activity, and transfer pricing related to intangibles). Other work generally points to uncertain tax planning increasing in the amount of income for profitable firms (Klassen et al., 2016). However, the results of these studies are largely constrained only to profitable firms.

2.2 Loss firms

Despite the extensive literature on the tax choices of profitable firms, few studies explicitly examine the tax choices of firms incurring losses. Loss firms are often excluded from prior studies either because of difficulty in calculating measures of tax planning or due to an assumed lack of incentive to pursue tax planning (Henry & Sansing, 2018; Scholes et al., 2015). However, a recent line of literature suggests that the tax benefits generated by operating losses provide an economically significant portion of tax savings realised by firms in profitable years. For example, Drake and co-authors (2020) find that declining GAAP (generally accepted accounting principles) ETRs over the past two decades are primarily due to GAAP treatment of releases from the valuation allowance as opposed to intentional tax planning. Similarly, Van der Geest and Jacob (2020) show that profitable firms with zero tax expense primarily achieve low ETRs by non-aggressive choices. Christensen and co-authors (2022) also present findings consistent with profitable firms often using loss carryovers as the main way to reduce ETRs to seemingly low values. Interestingly, their findings also show that profitable firms using loss carryovers do not choose more uncertain tax planning in profitable years, providing some evidence of an association between low ETRs and uncertain tax choices but not considering the choices during loss years. Given that these studies still often exclusively examine profitable firms in their analyses, an important underlying assumption is that the loss carryovers themselves do not contain more uncertain tax planning than in years with profits. Examining the uncertain tax choices of firms under losses is critical to understanding whether the loss carryovers themselves contain more uncertain tax planning.

Another stream of literature has more explicitly examined how loss carryovers can impact firm behaviour. Earlier studies emphasise that losses and their associated tax attributes are economically important to firms and other stakeholders (Altshuler & Auerbach, 1990; Altshuler et al., 2009). Both Maydew (1997) and Erickson, Heitzman and Zhang (2013) show that these attributes can motivate a firm to change its behaviour

by managing earnings between years to be able to maximise the benefits associated with losses. Often, these attributes are so important to firms that many even adopt 'poison pill' provisions to preserve the ability to offset future income (Erickson & Heitzman 2010; Sikes, Tian & Wilson, 2014). Given that firms view loss attributes as economically important, it is also important to consider the tax planning choices of firms under losses to provide a clear picture of what types of tax planning are ultimately being monetised upon the use of the loss attributes.

More recent work suggests that because tax loss carryovers shift downside risk to the government, they are associated with greater risk-taking by the firm (Langenmayr & Lester, 2018). Heitzman and Lester (2022) show that consistent with more limited downside risk, investors value cash more for firms with loss carryovers. In theoretical work, De Waegenaere and co-authors (2021) highlight that the ability to carry over losses intertemporally can provide incentives for loss firms to pursue riskier investment. Consistent with these incentives, regulators and standard-setters have suggested that firms may pursue even more uncertain tax planning when incurring losses, but whether firms actually do so is an empirical question (OECD, 2011; GAO, 1993).

3. HYPOTHESIS DEVELOPMENT

3.1 Main hypothesis: H_1

Given that prior literature presents conflicting evidence as to whether loss firms would pursue more or less uncertain tax planning, examining the relation between uncertain tax choices and income for both firms with profits and losses is important to develop an understanding of the full set of firms and their uncertain tax choices. On one hand, prior literature implies that loss firms would adopt less uncertain tax choices due to lack of ability to monetise those choices in most years (i.e., absent the ability to carryback the net operating loss) (Scholes et al., 2015). On the other hand, studies have also found that the ability to carry over losses can induce firms to make more uncertain choices (Langenmayr & Lester, 2018; De Waegenaere et al., 2021). Regulators have also shown concern that firms may make riskier tax choices under losses due to a lower likelihood of compliance or enforcement (OECD, 2011; GAO, 1993). Because these lines of prior work present conflicting reasoning as to how loss firms might choose uncertain tax planning, this article forms the following hypothesis in the null form:

> **H_1**: *The relation between income and uncertain tax planning is not different between profit and loss firms.*

3.2 Supplemental hypotheses: H_2 and H_3

To investigate this question further, the article also considers two supplemental hypotheses to better understand both how the relation between losses and uncertain tax planning varies in the cross-section as well as whether firms with prior losses have their uncertain tax planning subsequently overturned by an enforcement agency. First, the article turns to the rationale presented by regulators of the uncertain tax planning of loss firms in particular. Both the OECD and GAO have expressed concern that firms may make their most uncertain tax choices in years with losses due to compliance and enforcement difficulties (OECD, 2011; GAO, 1993). In line with this assertion, IRS data documents that loss firms are often examined less frequently than their profitable counterparts (IRS, 2021). However, prior work has shown that the likelihood of enforcement curbs tax planning by firms (Hoopes, Mescall & Pittman, 2012). If loss

firms respond to the risk of enforcement, the present article anticipates that any differential relation should be attenuated by higher enforcement risk. To consider this question, the article again frames the hypothesis in the null form as follows:

> **H_2**: *The relation between losses and uncertain tax planning is not attenuated by greater risk of enforcement.*

Finally, the article studies how prior losses influence settlements with tax authorities. Given that regulators and enforcement agencies have long suspected that firms engage in more uncertain tax planning under losses, it may follow that loss firms experience greater levels of positions that are examined and overturned when attempting to monetise some or all of those positions. However, in practice, such examinations typically involve assessing the tax choices of multiple years during one audit, which adds to the task complexity. Importantly, any observed differential relation between losses and uncertain tax planning could be eliminated by better enforcement when the firm begins to produce profits and use the loss carryforwards produced under losses. The article states the following hypothesis in the null form to consider how prior losses map into settlements with tax authorities for profitable firms:

> **H_3**: *Profitable firms with prior losses do not experience greater settlements with tax authorities than other profitable firms.*

4. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

4.1 Sample selection and variable measurement

The data employed in this study come from the Compustat Fundamentals Annual and Compustat Segments databases for fiscal years ending 2007 to 2016. The sample begins in 2007 because it is the first year subject to disclosure rules under FIN 48 for which UTB data are available for most firms. The sample ends in 2016 prior to the introduction of the *Tax Cuts and Jobs Act of 2017* to ensure a constant statutory tax rate and other tax laws across the sample period. The article excludes firms in regulated utility and financial services industries (SIC 4900-4999 and 6000-6999) consistent with prior studies, because the tax laws and reporting environments within these industries are substantially different from other industries. The article also eliminates firms with total assets of less than USD 10 million and firms with a negative or missing ending balance for UTB reserves to ensure that all firms in the sample are large public firms with similar reporting requirements (Dyreng et al., 2019).[5] Further, the article requires that each observation has sufficient data to calculate all variables in regression models for the main analyses. All variables are winsorised at the 1st and 99th percentile levels. After imposing these data requirements, the sample consists of 13,360 firm-year observations.

Because the sample includes loss firms, the article measures uncertain tax planning based on a firm's UTB disclosures for two primary reasons. First, UTB disclosures provide uniform rules to capture the firm's uncertainty on an *ex ante* basis (FASB, 2006). These rules outline that the reserve must be made with respect to only the position's technical merits, meaning that expectations about future profitability and the potential of enforcement cannot be considered when establishing the reserve for the

[5] The USD 10 million threshold ensures that all firms are subject to filing Schedule M-3 as well as other disclosure features. In untabulated analyses, the article also excludes observations with zero additions to UTBs and finds the results are qualitatively similar.

year. Second, De Simone and co-authors (2020) show that the UTB reserve reported under FIN 48 is the most powerful proxy in capturing uncertain tax choices in samples with both profit and loss firms. While some literature documents that firms have discretion in their UTB reserves (De Simone, Robinson & Stomberg, 2014), studies employing proprietary IRS data show that UTB reserves capture more uncertain tax strategies effectively (Lisowsky, Robinson & Schmidt, 2013; Ciconte et al., 2023). Further, although UTB reserves cannot perfectly capture the risk associated with uncertain tax choices, prior literature shows that UTB reserves are positively associated with future cash tax settlements (Robinson, Stomberg & Towery, 2014). To confirm that the results are not due to differences in disclosure choices or measurement of income, the article also examines alternative measures of both uncertain tax choices and income in robustness analyses.

4.2 Descriptive statistics

Table 1 (Appendix B) presents univariate descriptive statistics of the sample in Panel A and Pearson correlation coefficients in Panel B. To capture incremental uncertain tax choices, the article measures the uncertain tax activities by using the additions relating to current year positions scaled by total assets and multiplied by 100 for interpretability to construct *UTBadd*. The article also presents summary statistics for the value of cumulative uncertain tax positions, *UTBend*. The mean values of *UTBend* and *UTBadd* indicate that the sample has an average ending balance of UTB reserves of 1.339% of assets and average annual additions relating to current year positions of 0.157% of assets. These values correspond to an average annual increase of the ending UTB balance of approximately 12% per year.

The mean value of *Loss*, an indicator variable equal to 1 when pre-tax income is negative, is 0.333, indicating that a substantial portion (33.3%) of the sample firm-years are loss observations. This value emphasises the prevalence of loss firms in the universe of public companies and stresses the importance of specifically studying how their incentives differ from profitable firms (Henry & Sansing, 2018). Consistent with the inclusion of loss firms in the sample, the natural logarithm of assets, *Size*, has a mean of 6.593, which illustrates that the sample firms are large (USD 730 million in assets on average) but smaller than in studies that exclude loss firms. Other firm characteristics and control variable values are consistent with prior studies and indicate that the sample consists of large public US-based firms with significant international activity.

5. RESEARCH DESIGN AND MAIN RESULTS

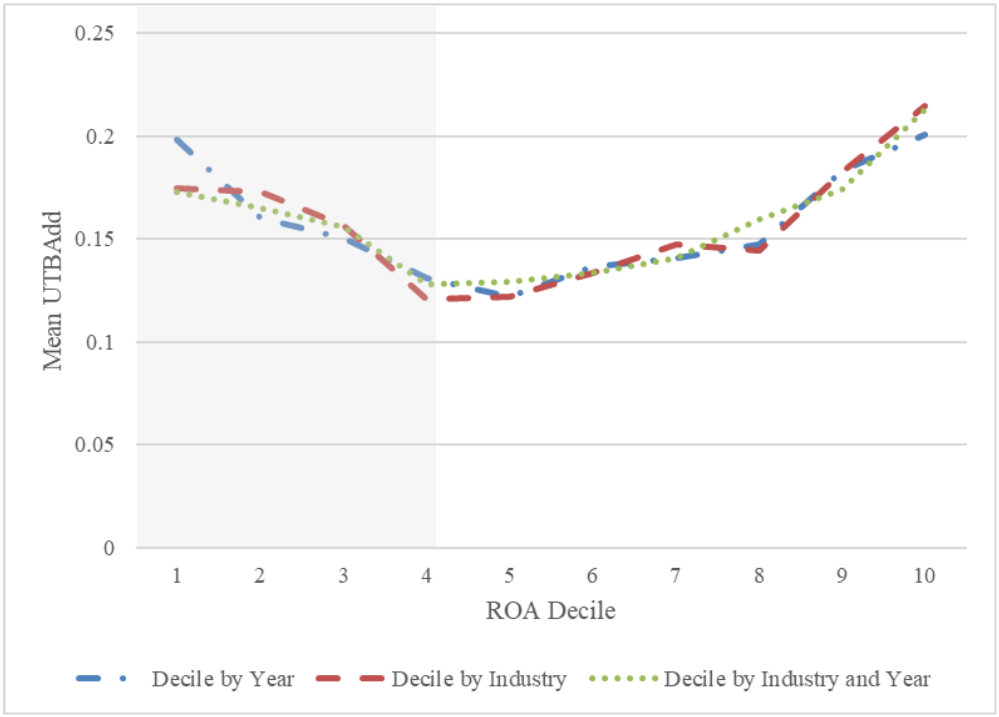
5.1 Tests of H_1

5.1.1 Univariate evidence

Because the article's first hypothesis relates to a potentially non-linear relation between pre-tax profit/loss and uncertain tax planning, the article employs a three-pronged approach to study this relation consistent with Kim and co-authors (2021) and Samuels and co-authors (2021). This process involves first examining the full distribution graphically. To do so, the article divides the sample into deciles based on *ROA* and plots the mean value of *UTBadd* within each decile, where the decile is constructed by year, industry, and both industry and year and plotted separately. These results are presented in Figures 1 and 2. Figure 1 plots the mean value for *UTBadd* for all sample firm-years. Interestingly, despite the conventional wisdom that loss firms often cannot immediately

monetise uncertain tax planning, Figure 1 suggests a non-linear relation between *ROA* and *UTBadd*, and it indicates the same shape for deciles when sorted by year, industry, or industry and year.[6] The plot shows a V-shaped distribution with a minimum value around the decile where losses turn into profits, with the amount of *UTBadd* increasing in profits for profitable firms and losses for loss firms (the shaded area). Importantly, the distribution shows that the change in linearity occurs when loss firms begin to be included in each decile. While Figure 1 plots the relation based on the disclosed value of UTBs, some firms choose to disclose no UTBs. Figure 2 presents the same univariate sorts when excluding firm-years reporting zero additions to the UTB reserves, which ensures that the distribution observed in Figure 1 is not simply due to the inclusion of zero-UTB observations. Again, Figure 2 illustrates a shape of the distribution consistent with Figure 1. These Figures provide preliminary evidence that uncertain tax planning is non-linear and increasing in both profits and losses.

Fig. 1: Mean *UTBadd* by ROA Decile



[6] The article also considers untabulated analyses of the raw values of pre-tax income and UTB reserve additions and finds that the shape of the distribution is still such that uncertain tax choices appear to be increasing in both profits and losses. These plots confirm that the univariate findings are not simply products of the scaling factor employed.

Fig. 2: Mean *UTBadd* by ROA Decile Excluding Zero UTB Firms

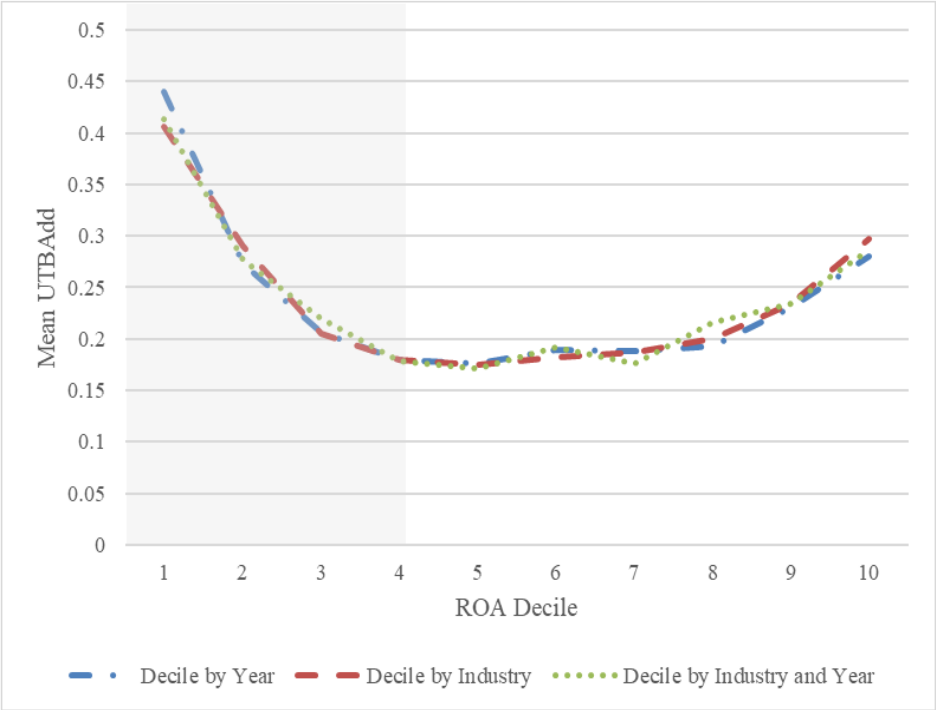


Table 2 (Appendix B) reports the numerical values that correspond to each decile of *ROA* based on the sort regime employed. Panel A shows the values for the univariate sorts using the full sample, which corresponds to the values in Figure 1. Each ranking scheme presents a consistent finding that the level of *UTBadd* is decreasing in the first four deciles and then begins to increase. Importantly, across all ranking schemes, the reversal in the values of *UTBadd* occurs around the decile where loss firms stop being included (decile 5). The difference between deciles 3 and 4 is consistently statistically significant, yielding support that the value of *UTBadd* is increasing in the amount of losses for loss firms. For profitable firms (deciles 5 through 10), there appears to be a generally increasing trend as profits increase.

Overall, these univariate sorts suggest that the relation between income and uncertain tax planning for the full distribution of firms is non-linear, exhibiting a V-shape with a minimum around zero income. These results highlight that the shape of this distribution is not driven by control variables in regressions but rather can be illustrated using univariate data. To formally test the shape of this distribution, the article also conducts multivariate regression analyses below.

5.1.2 Multivariate regression models

To support the univariate findings, the article uses multivariate regression models that use both a polynomial specification as well as a partitioning specification. In the polynomial regression models, the article uses both linear and squared polynomial terms on the income variables (*ROA* and ROA^2) to allow the shape of the distribution to vary non-linearly without restricting the location of the partition. To consider these tests, the

article estimates the following OLS regression model with standard errors clustered at the firm level:

$$UTBadd_{i,t} = \beta_0 + \beta_1 ROA_{i,t}^2 + \beta_2 ROA_{i,t} + \delta Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

In this model, *UTBadd* is the measure for uncertain tax planning adopted in the current year, and *ROA* is the firm's pre-tax return on assets that measures the income level of the firm.

Because the article's hypothesis pertains to the partition at zero income, in addition to the polynomial specification, the article also employs a regression model that partitions the sample at zero income by introducing the variable *Loss*, which is equal to 1 when the firm incurs negative pre-tax income, and interacting *Loss* with *ROA*. This model is estimated as follows using OLS regression with standard errors clustered at the firm level:

$$UTBadd_{i,t} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 Loss_{i,t} + \beta_3 Loss * ROA_{i,t} + \delta Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

To account for other reasons that may result in different levels of uncertain tax planning, the article also employs a common vector of control variables in Equations 1 and 2 that prior literature has shown to be associated with differential levels of uncertain tax planning. Specifically, the control vector includes age (*Age*), size (*Size*), long-term debt (*Leverage*), current debt (*CDebt*), and Big 4 auditor presence (*Big4*), because these features may create different incentives and restrictions associated with adopting uncertain tax choices (Lisowsky et al., 2013; Law & Mills, 2015; Klassen et al., 2016). The article also controls for specific activities that can contribute differently to the amount of tax uncertainty for a firm, consistent with inferences drawn from prior literature (Dyreng et al., 2019) including foreign income (*ForeignInc*), research and development expenses (*R&D*), and intangible assets (*Intang)*.[7] In addition to these variables, the model also controls for overall risk-taking (*STDROA*), financial constraints (*Zscore*), and the firm's expectations of future growth (*MtB*), as prior literature has attributed tax planning to overall risk as well as the need for additional cash (Altman, 1968; Langenmayr & Lester, 2018; Yost, 2018; Edwards, Shevlin & Schwab, 2016).

In addition to these control variables, the main estimations of Equations 1 and 2 also include industry and year fixed effects. To further account for unobservable differences between firms, the article also ensures the results are robust to including firm and year fixed effects and presents those results beside the results using other fixed effect structures in the main analyses.

Table 3 (Appendix B) presents the results of estimating Equations 1 and 2. Models 1 and 3 show a positive and significant coefficient on ROA^2 (t-stat = 3.16 and t-stat = 2.48 respectively), suggesting that the relation between *ROA* and *UTBadd* is not linear but

[7] Although the coefficients on *R&D* and *Intang* are negative, this is anticipated as the sample includes both profit and loss firms. In Table 12 (Appendix B), the negative coefficient goes away and loses significance for profit firms when run in a model where *Loss* is interacted with each, highlighting that this sign is only due to the inclusion of both profit and loss firms in the article's main sample.

rather increasing in both positive and negative values of *ROA.* Models 2 and 4 estimate Equation 2 using the partitioning specification. Again, these models indicate a positive and significant coefficient on *ROA* (t-stat = 4.29 and t-stat = 1.74 respectively) but a negative and significant coefficient on the interaction term *Loss*ROA* (t-stat = -6.16 and t-stat = -2.33 respectively). Model 2 also indicates a positive and significant coefficient on loss, implying that loss firms engage in more uncertain tax planning outside of the relation with ROA. These results provide evidence that uncertain tax planning is non-linear and increasing in both profits and losses. In Models 1 and 2, the coefficients on the control variables are generally consistent with prior literature, and the article conducts robustness analyses where all controls are fully interacted with *Loss* to be sure that underlying differences in the control variables are not driving the results. In Models 3 and 4, the firm fixed effects largely subsume the significance of the control vector but arrive at consistent inferences with respect to the variables of interest.

5.1.3 Spline regression models

To further support the findings that uncertain tax planning is increasing in both profits and losses, the article also employs a spline regression model that partitions the model at zero income to evaluate a piecewise linear estimation for both profit and loss firms. Specifically, the article estimates the relation between income and uncertain tax planning using the following spline regression model:

$$UTBadd_{i,t} = \beta_0 + \beta_1 ROA < 0_{i,t} + \beta_2 ROA \geq 0_{i,t} + \delta Controls_{i,t} + \varepsilon_{i,t} \quad (3)$$

Consistent with the other equations, the article estimates this model with both year and industry as well and year and firm fixed effects.

The results of estimating Equation 3 are presented in Table 4 (Appendix B). In Model 1, the coefficient on β_1 is negative and significant (t-stat = -6.75), suggesting that uncertain tax choices are increasing in the amount of losses in a given firm-year. The coefficient on β_2 is positive and significant (t-stat = 3.03), which indicates that uncertain tax choices are also increasing in the amount of pre-tax profits realised by the firm in a given year. The test of the equality of these two coefficients (F-stat = 28.85) indicates that they are statistically different values. In Model 2, the article repeats the same analyses using firm fixed effects in lieu of industry fixed effects and finds similar conclusions, namely that uncertain tax choices are increasing in both losses and profits and that the coefficients are different in this piecewise linear regression model.

Taken together, Figures 1 and 2 and Tables 2, 3, and 4 provide strong support that the relation between uncertain tax choices is not linear across the full sample of firms. These results support the idea that uncertain tax choices are increasing in the amount of pre-tax income realised by profitable firms in a given year, consistent with prior literature. However, the findings also present a more complete picture of the full sample of firms by also considering loss firms in the analyses as well as providing for non-linearity in the relation across the full sample of firms. Importantly, in stark contrast to conventional wisdom, these results indicate that uncertain tax choices are also increasing in the amount of pre-tax losses for loss firms. They provide critical insight to better understand how a significant portion of firms behave with respect to uncertain tax choices, and these findings suggest that regulators' concerns that loss firms pursue more uncertain tax planning are warranted. To confirm that these results are not sensitive to the measurement factors used in the main analysis, the article also considers a number of different specifications and measurements in robustness analyses.

5.2 Tests of H_2

To further explore the relation between losses and uncertain tax choices, the article first considers how issues raised by regulators and enforcement agencies relate to the choice to pursue more uncertain tax strategies. On one hand, some regulators have suggested that loss firms may pursue more uncertain tax choices due to a lack of compliance or enforcement (OECD, 2011), but other agencies have held that enforcement efforts are increased when claiming tax benefits associated with losses (Treasury Inspector General for Tax Administration (TIGTA), 2015). Therefore, it is an empirical question whether a higher probability of enforcement would curb the adoption of uncertain tax strategies by loss firms. To consider this question, the article estimates the following regression model using OLS with standard errors clustered by firm:

$$UTBadd_{i,t} = \beta_0 + \beta_1 Loss_{i,t} + \beta_2 HighEnforce_{i,t} + \beta_3 Loss * HighEnforce_{i,t} + \delta Controls_{i,t} + \varepsilon_{i,t} \quad (4)$$

All estimations of Equation 4 include both industry and year fixed effects and include the same vector of control variables as Equation 1. Given the findings from the main analyses, this model uses a partitioning variable, *Loss*, to identify firms with current year losses. In Equation 4, *HighEnforce* is identified using two definitions. First, to capture the likelihood of enforcement, the article employs the model developed by Ayers, Seidman and Towery (2019) to capture firms likely to be subject to an audit. Specifically, the present article constructs *HighCIC* as an indicator variable equal to 1 if the firm falls in the top decile of audit probability from the Ayers and co-authors (2019) model.[8] Second, to capture the scrutiny of tax enforcement, the article considers the position of the TIGTA that firms using net operating losses carried over from a prior year are likely subject to more tax scrutiny. Accordingly, *NOLCB* is an indicator variable if the firm is a loss firm and has negative tax paid in the current year, suggesting the firm is receiving a refund for past taxes paid.[9]

Table 5 (Appendix B) presents the results of estimating Equation 4 using each of the two measures for *HighEnforce*. Model 1 employs *HighCIC* as the measure for *HighEnforce* and indicates a positive and significant coefficient on *Loss* (t-stat = 5.34), consistent with the main results. However, the coefficient on the interaction term *Loss*HighEnforce* is negative and significant (t-stat = -2.68), which suggests that loss firms respond to a higher enforcement probability by reducing the adoption of uncertain tax choices. The sum of *Loss* and *Loss*HighEnforce* is not statistically significant from zero (sum = -0.0189, t-stat = 0.85), suggesting that the average positive relation observed in the main analyses between losses and uncertain tax choices is attenuated when enforcement likelihood is sufficiently high.

Similarly, Model 2 presents the results of the same equation using *NOLCB* as a measure of heightened scrutiny from enforcement agencies. In Model 2, the coefficient on *Loss* is again positive and significant (t-stat = 5.07), and the coefficient on the interaction

[8] The article uses the top decile to ensure that all firms in this group have a higher than average probability of audit, but the results are not sensitive to this cutoff.

[9] Because all firms with a positive value of *NOLCB* are loss firms by definition, the main effect of *HighEnforce* is omitted from these models.

term *Loss*HighEnforce* is negative and significant (t-stat = -2.68). Again, the sum of *Loss* and *Loss*HighEnforce* is not statistically significant from zero (sum = 0.0081, t-stat = 0.62), which suggests that the average relation observed in the main analyses is eliminated when enforcement scrutiny is sufficiently high. Taken together, these results suggest that the positive relation between losses and uncertain tax choices depends on the level of enforcement anticipated by the firm, which provides meaningful insight to regulators, standard-setters, and enforcement agencies.

5.3 Tests of H_3

Finally, the article considers the issue of whether firms with prior losses experience more reversals of uncertain tax choices after they become profitable. To analyse this possibility, the article restricts the sample to firms with current year profits and examines how losses in the prior three years map into the amount of settlements recorded by the firm. If loss firms adopt more uncertain tax choices than profitable firms only to have those choices overturned upon becoming profitable, that would imply that these firms are not at any advantage relative to other profitable firms. Similarly, if loss firms are simply over-reserving for the same types of tax choices as profitable firms, this behaviour should unwind through future settlements, resulting in higher levels of settlements with tax authorities. To formally evaluate these possibilities, the article estimates the following regression model using OLS and standard errors clustered by firm:

$$Settle_{i,t} = \beta_0 + \beta_1 Loss_{i,t-1} + \beta_2 Loss_{i,t-2} + \beta_3 Loss_{i,t-3} + \delta Controls_{i,t} + \varepsilon_{i,t} \quad (5)$$

The dependent variable in Equation 5 is *Settle*, which is defined as the total settlements with tax authorities disclosed by the firm during the year scaled by total assets and multiplied by 100 for interpretability. Equation 5 is estimated using the same control variable vector as Equation 1 and includes industry and year fixed effects in all estimations. If prior losses are associated with different levels of settlements, the article anticipates a significant coefficient on the *Loss* variables, and if not, the article anticipates no significant relation.[10]

Table 6 presents the results of estimating Equation 5 where the sample includes only firms with current year profits to ensure consistency of other incentives. Each model employs lagged values of *Loss* to identify firms that incurred losses in prior years. Model 1 uses one preceding year of losses and finds no significant association on the coefficient of $Loss_{t-1}$ (t-stat = -1.24). Model 2 uses two preceding years of losses and shows no significant coefficient on either $Loss_{t-1}$ (t-stat = -0.80) or $Loss_{t-2}$ (t-stat = -1.57). However, the sum of the coefficients of $Loss_{t-1}$ and $Loss_{t-2}$ is negative and significant (sum = -0.011, t-stat = -1.86), suggesting that firms with consecutive years of prior losses actually have lower levels of settlements after realising profitability. Model 3 provides similar inferences to Model 2 in showing that when using three preceding

[10] In robustness analyses, the article replaces *Settle* with *UTBadd* in a sample of profitable firms with negative tax expense to investigate whether firms using NOLs make more uncertain tax choices after coming out of losses and finds no significant relation. These tests confirm that firms with prior losses do not adopt more uncertain tax choices than other profitable firms in the years following those losses, consistent with Christensen and co-authors (2022). However, these results also highlight the distinct findings of this study that loss firms choose more uncertain tax planning while incurring losses but not when using NOLs upon reaching profitability.

years, there is no significant relation between any of the individual coefficients for each year but the sum of the three coefficients is again negative and significant (sum = -0.0153, t-stat = -2.31). These results provide evidence of no differences in settlements between firms with prior losses in a given year and prior profits in a given year, despite the main analyses showing the positive relation between losses and uncertain tax choices. Further, the combined coefficients in these tests highlight that firms with serial losses actually realise lower levels of settlements, which is in line with the concerns of some regulators that loss firms may utilise loss carryovers as a mechanism to embed more uncertain tax planning choices (OECD, 2011).

6. ROBUSTNESS AND ADDITIONAL ANALYSES

6.1 Alternative measures for uncertain tax choices

To ensure the main results are not sensitive to measures used in defining uncertain tax choices, the article considers two alternate measures of uncertain tax choices. In these analyses, alternative definitions of uncertain tax choices are substituted for *UTBadd* in Equation 2. Because measuring tax planning of profit and loss firms together has been difficult in prior literature, the article first employs a measure based on Henry and Sansing (2018). This measure is calculated by scaling the firm's tax conformity, Δ [(cash taxes paid adjusted for tax refunds) minus (pre-tax income times the statutory tax rate)], by the market value of assets. Consistent with literature using the volatility of tax outcomes as a measure of the risk/uncertainty of tax planning, the article uses the standard deviation of this measure over the following three years to construct *STDHS*. Because this measure does not require the disclosure of tax reserves that began in 2007, the analyses using *STDHS* include all firm-years beginning in 1994.

The results of estimating Equation 2 using *STDHS* as the dependent variable are presented in Model 1 of Table 7 (Appendix B). Consistent with the main results, the coefficient on *ROA* is positive and significant (t-stat = 7.70), and the coefficient on *Loss*ROA* is negative and significant (t-stat = -18.26). Importantly, these findings show that the observed relation between losses and uncertain tax choices is not due to the sample period or disclosure choices. In addition to using *STDHS*, Model 2 estimates Equation 2 in the main sample using *UTBaddS*, which scales the increases in tax reserves by sales. Again, the coefficient on *Loss*ROA* is negative and significant, supporting the inferences about loss firms.

6.2 Alternative measures for income and losses

Because the main analyses rely on a parsimonious definition of pre-tax operating income commonly used in prior tax planning literature, the article also considers alternative measures for income and loss. Table 8 (Appendix B) estimates Equation 2 using two different measures for income and losses, *Taxable Income* and *Income Net of Special Items*. *Taxable Income* is calculated consistent with prior literature as the amount of current tax expense grossed up by the statutory tax rate and scaled by total assets. This estimate of taxable income considers the fact that book income and taxable income are often different. *Income Net of Special Items* is calculated as pre-tax income less special items and scaled by total assets. This measure of income considers that many special items (for example, goodwill impairments) might affect book income but not taxable income.

The results of estimating Equation 2 with each of these alternative measures of income are presented in Table 8 (Appendix B) using both industry and year fixed effects. Model 1 employs *Taxable Income* to define both the partitioning variable, *Loss*, and *ROA*, and the results indicate similar inferences to the main results, namely a positive and significant coefficient on *ROA* (t-stat = 2.82) and a negative and significant coefficient on the interaction term *Loss*ROA* (t-stat = -2.87). The results in Model 2 show a similar relation such that *UTBadd* is increasing in *ROA* (t-stat = 4.29) but also increasing in losses, illustrated by the negative coefficient on *Loss*ROA* (t-stat = -6.17). Together these models support the results in the main analyses and show that the findings are not sensitive to the definition of income and loss used in the main tests of Equation 2.

6.3 Alternative samples and specifications

Because loss firms can often differ from profit firms in terms of other firm characteristics (i.e., they are more likely to be growth firms or otherwise different firms than the average profitable firm), the article also employs alternative samples and specifications to confirm that the results are not sensitive to different assumptions. First, the article considers differences in firm types by using a sample of propensity score matched firms. Although the main analyses include firm fixed effects to account for unobservable firm characteristics, propensity score matching offers a distinct restrictive approach to support the robustness of these findings. Specifically in this sample, loss firms are matched one-to-one based on all covariates in the main model.[11] Model 1 of Table 9 (Appendix B) presents the results of estimating Equation 2 in the propensity score matched sample. In this model, the coefficient on *ROA* is positive and significant (t-stat = 2.83), and the coefficient on the interaction term *Loss*ROA* is negative and significant (t-stat = -2.81). These coefficients support the inferences of the main analyses.

In addition to using a propensity score matched sample, the article also considers differences in covariates explicitly based on the partitioning variable *Loss*. To do so, the article estimates Equation 2 and adds a set of full interactions with *Loss* to the control vector, where every control variable is interacted with *Loss*. The results of this estimation are presented in Model 2 of Table 9. Again, similar to the main results, the coefficient on *ROA* is positive and significant (t-stat = 2.79), but the coefficient on *Loss*ROA* is negative and significant (t-stat = -4.33). Collectively, these findings show that the results in the main analyses are robust to different sample restrictions and are not due to differences in the relation of other control variables based on the partitioning variable *Loss*.

6.4 Big bath accounting and outlier observations

Next, when firms incur large operating losses, they often have incentives to engage in big bath accounting (Hayn, 1995; Hope & Wang, 2018). Figures 1 and 2 both show an increasing trend in uncertain tax choices as the magnitude of losses increases, and the effect of reserving for uncertain tax choices is a further reduction in net income. These incentives raise the potential concern of whether firms with extreme negative values of *ROA* drive the results found in the main analyses. To rule out this possibility, the article

[11] Firms are matched based on the absolute values of *ROA* to provide for matches between the two firms. To confirm that the findings are not driven by this design choice, the article also matches on only the control vector and finds that the results are qualitatively similar.

estimates Equation 2 using three different sub-samples where the absolute value of *ROA* is bounded at 35%, 25%, and 15% to eliminate outlier observations for both profit and loss firms.

Table 10 (Appendix B) presents the results of these models. Model 1 shows the results where *ROA* is bounded at an absolute value of 35%, which eliminates about 1,000 observations from the sample compared to the main analyses. In this model, consistent with the main results, the coefficient on *ROA* is positive and significant (t-stat = 3.74), and the coefficient on *Loss*ROA* is negative and significant (t-stat = -5.41). Similarly, Model 2 restricts the sample to firms with absolute values of *ROA* within a band of 25% and shows similar sign and significance on both *ROA* (t-stat = 3.69) and *Loss*ROA* (t-stat = -4.88). Finally, Model 3 imposes a restriction of 15% and indicates a positive but insignificant coefficient on *ROA* (t-stat = 0.87) and a negative and significant coefficient on *Loss*ROA* (t-stat = -2.24), which implies that the relation between uncertain tax choices and profits may be driven by firms with high values of *ROA* but that the relation between uncertain tax choices and losses is not driven by firms with extreme low values of *ROA*. Taken together, these findings show that the results presented in the main analyses are not simply due to big bath accounting employed by some loss firms.

6.5 Loss persistence

In a final robustness test, the article considers whether loss persistence influences the choice of uncertain tax planning of loss firms. From a theoretical perspective, firms choose more uncertain tax planning as a means to generate future benefits. However, this feature may be driven by lower enforcement, as documented by H_2 or by lower loss persistence (i.e., the firm expects to be profitable sooner). Because the rules regarding the reserve for UTBs state that the amount should only be based on the technical merits of a position rather than the expectation of future income, the article does not anticipate that the persistence of losses should influence the relation between losses and uncertain tax planning. To support that the main findings are due to lower threat of enforcement rather than less persistent losses, the article employs a modified version of Equation 4, substituting *Prior3Loss* for *HighEnforce*. In this new model, *Prior3Loss* is set equal to 1 if the firm had persistent losses (i.e., losses in each of the prior three years). The results of estimating this equation are presented in Table 11 (Appendix B), and the inferences show that prior losses have no incremental association with uncertain tax planning. In addition, Model 2 divides the losses into the prior three years among firms with a current year loss and again finds no significant association.

6.6 Sources of incremental uncertainty

Finally, the article considers the sources of uncertain tax planning for loss firms. To do so, the article examines three potential sources of tax uncertainty identified by prior literature: (1) research and development activities; (2) intangible assets, and (3) foreign income. Empirically, the article interacts *R&D*, *Intang*, and *ForeignInc* with both *Loss* and *ROA* in Equation 2. The results of this analysis are presented in Table 12 (Appendix B). In Model 1, the three sources of uncertainty are interacted with *Loss*. The coefficients on *Loss*R&D* and *Loss*Intang* are not significant, but the coefficient on *Loss*ForeignInc* is negative and significant. Model 2 provides full interactions and shows a negative and significant coefficient on *Loss*ROA*R&D* as well as *Loss*ROA*ForeignInc*. These results indicate that loss firms realise more incremental tax uncertainty from research and development activities and foreign income, on average.

7. CONCLUSION

This article investigates the role of losses in uncertain tax planning by considering the relation between pre-tax income and uncertain tax choices for both profit and loss firms. Recent accounting literature has indicated that firms often achieve low effective tax rates by using benefits carried over from loss years through net operating losses (Drake et al., 2020; Van der Geest & Jacob, 2020; Christensen et al., 2022). Given the importance of these carryovers generated under losses and the fact that they are often used in subsequent years to reduce tax payments, it is important to understand how firms behave with respect to uncertain tax choices under losses.

While conventional wisdom indicates that profit firms have greater incentive to pursue uncertain tax choices and that the relation between pre-tax income and uncertain tax choices is increasing among profitable firms (Scholes et al., 2015), regulators and standard-setters have expressed concern that firms may pursue more uncertain tax choices under losses. Consistent with these concerns, recent work supports the notion that tax loss carryovers can increase a firm's risk appetite and that conventional wisdom does not always hold (Langenmayr & Lester, 2018; De Waegenaere et al., 2021).

To investigate the relation between pre-tax profit/loss and uncertain tax choices, the article employs an approach consistent with prior literature that considers non-linearities in accounting research by using univariate graphical evidence, multivariate regression, and spline regression techniques (Kim et al., 2021; Samuels et al., 2021). The results indicate that for profitable firms, consistent with conventional wisdom, uncertain tax choices are increasing in pre-tax operating profits. However, the results also illustrate that, consistent with concerns from regulators, uncertain tax choices are increasing in the magnitude of the loss for loss firms. Collectively, these findings suggest that the relation between uncertain tax choices and pre-tax profit/loss is not linear such that uncertain tax choices are increasing in both profits and losses. In cross-sectional analyses, the article finds that the relation between losses and uncertain tax choices is attenuated when the likelihood of enforcement is high, which implies that concerns about lower levels of enforcement among loss firms are not unfounded. In addition, the article also finds that profitable firms with prior losses do not experience higher levels of settlements with tax authorities, illustrating that the relation is not simply due to over-reserving or efficiently captured when trying to realise the benefits of tax loss carryovers. The results are robust to a battery of different robustness analyses.

This evidence sheds light on an important subset of firms relevant to both academic accounting literature as well as regulators and standard-setters. First, despite the importance of the tax attributes generated by losses, prior literature has not thoroughly examined the behaviour and incentives of firms under losses. This study adds to the understanding of uncertain tax choices by loss firms in showing that such choices are increasing in the amount of pre-tax operating loss incurred by the firm. In addition, this article also contributes to the broader line of recent literature that challenges conventional wisdom by documenting non-linearities in firm behaviour (Kim et al., 2021; Samuels et al., 2021; Basu et al., 2020). Finally, this research has implications for regulators and standard-setters. The findings confirm the suspicions of some regulators that loss firms choose more uncertain tax planning than profitable firms.

Collectively, this study provides significant insight into the tax choices of loss firms by considering the incentives surrounding such a choice. Despite the assumption that loss firms often do not immediately benefit from uncertain tax choices, prior literature

documents that firms use tax attributes generated under losses to reap cash benefits later. This article adds to the literature by documenting that the relation between uncertain tax choices and pre-tax income is not linear across the full universe of firms and specifically that the relation is increasing in both profits and losses.

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9. APPENDIX A

Variable Definitions

Variable Name	Variable Definition
Age	The firm's age in years.
Big4	An indicator variable equal to 1 if the firm is audited by a Big Four accounting firm.
CDebt	The ratio of current debt to total assets, lagged by one year.
ForeignInc	The ratio of a firm's foreign income to sales. Missing values for foreign income are set equal to zero.
HighCIC	An indicator variable equal to 1 if the firm falls in the top decile of firms based on audit probability modeled by Ayers, Seidman and Towery (2019).
Income Net of Special Items	Pre-tax income less special items, scaled by total assets.
Intang	The ratio of intangible assets to total assets.
Leverage	The ratio of long-term debt to total assets, lagged by one year.
Loss	An indicator variable equal to 1 if the firm's pre-tax income is negative year; zero otherwise.
MtB	The market value of equity divided by the book value of equity, lagged by one year.
NOLCB	An indicator variable equal to 1 if the firm is a loss firm and has negative tax paid; zero otherwise.
Prior3Loss	An indicator variable equal to 1 if the firm had a cumulative loss over the prior three years; zero otherwise.
R&D	The ratio of research and development expenses to sales.
ROA	The ratio of pre-tax income to total assets.
Settle	Settlements with tax authorities in the current year scaled by total assets and multiplied by 100 for interpretability.
Size	The natural logarithm of total assets.
STDHS	The standard deviation of the firm's cash tax non-conformity (Δ) scaled by the market value of assets, consistent with Henry and Sansing (2018), over the future three years.
STDROA	The standard deviation of the firm's return on assets over the prior three years.
Taxable Income	Estimated taxable income scaled by assets, where taxable income is calculated as current tax expense grossed up by the statutory tax rate.
UTBadd	The additions to the tax reserve for uncertain tax benefits relating to positions adopted in the current year scaled by assets and multiplied by 100, consistent with Dyreng, Hanlon and Maydew (2019) for interpretability.
UTBaddS	The additions to the tax reserve for uncertain tax benefits relating to positions adopted in the current year scaled by sales and multiplied by 100, consistent with Dyreng, Hanlon and Maydew (2019) for interpretability.
UTBend	The total tax reserve for uncertain tax benefits scaled by total assets and multiplied by 100 for comparability.
Zscore	The opposite-signed Altman (1968) bankruptcy prediction score, lagged by one year, such that financial constraints are increasing in the measure.

10. APPENDIX B

Table 1: Descriptive Statistics

Panel A: Univariate Statistics

Variable	N	Mean	St Dev	P25	Median	P75
UTBend	13,360	1.339	2.035	0.135	0.612	1.603
UTBadd	13,360	0.157	0.286	0.000	0.043	0.179
Loss	13,360	0.333	0.471	0.000	0.000	1.000
ROA	13,360	-0.013	0.229	-0.044	0.047	0.104
Age	13,360	24.362	16.149	13.000	19.000	31.000
Size	13,360	6.593	2.033	5.145	6.525	8.023
Big4	13,360	0.791	0.407	1.000	1.000	1.000
ForeignInc	13,360	0.015	0.074	0.000	0.001	0.035
R&D	13,360	0.616	3.317	0.007	0.040	0.145
Intang	13,360	0.208	0.204	0.029	0.146	0.341
Leverage	13,360	0.170	0.191	0.000	0.121	0.269
CDebt	13,360	0.032	0.066	0.000	0.005	0.032
STDROA	13,360	0.150	0.381	0.020	0.047	0.123
ZScore	13,360	3.888	6.094	1.737	3.204	5.221
MtB	13,360	3.083	5.602	1.295	2.231	3.809

This Table reports descriptive statistics. N is the number of observations, StdDev is the standard deviation, P25 (P75) is the 25th (75th) percentile of the variable's distribution. Variable definitions are reported in Appendix A.

Panel B: Pearson Correlations

	UTBadd	Loss	ROA	Age	Size	Big4	ForeignInc	R&D	Intang	Leverage	Cdebt	STDROA	ZScore	MtB
UTBend	**0.566**	**0.134**	**-0.148**	**-0.022**	-0.007	**0.061**	**0.060**	**0.028**	**-0.048**	**-0.019**	**-0.015**	**0.041**	**0.134**	0.004
UTBadd		**0.024**	**-0.036**	**-0.037**	**0.086**	**0.115**	**0.086**	0.015	**-0.030**	**-0.022**	**-0.026**	**0.039**	**-0.030**	**0.055**
Loss			**-0.690**	**-0.261**	**-0.415**	**-0.170**	**-0.361**	**0.235**	**-0.134**	**-0.004**	**0.120**	**0.165**	**0.208**	-0.005
ROA				**0.245**	**0.433**	**0.175**	**0.352**	**-0.447**	**0.143**	**-0.029**	**-0.142**	**-0.233**	**-0.290**	0.013
Age					**0.418**	**0.100**	**0.182**	**-0.123**	**0.065**	**0.077**	**-0.039**	**-0.218**	**0.026**	**-0.027**
Size						**0.501**	**0.281**	**-0.199**	**0.287**	**0.318**	**-0.060**	**-0.198**	**-0.062**	**0.035**
Big4							**0.102**	**-0.076**	**0.106**	**0.167**	**-0.102**	**-0.080**	**-0.052**	**0.049**
ForeignInc								**-0.116**	**0.102**	**0.007**	**-0.070**	**-0.088**	**-0.073**	-0.006
R&D									**-0.110**	**-0.057**	**-0.017**	**0.160**	**-0.018**	**0.044**
Intang										**0.232**	**-0.061**	**-0.086**	**0.071**	-0.001
Leverage											0.002	**-0.042**	**0.258**	-0.008
CDebt												**0.033**	**0.203**	**-0.045**
STDROA													**0.052**	0.011
ZScore														**-0.187**

This Table reports Pearson correlation coefficients. Correlations significant at the 5% level are indicated in bold. Variable definitions are reported in Appendix A.

Table 2: Income Levels and Uncertain Tax Choices -- Univariate Differences

Panel A: All Firms

	ROA decile									
Ranking Scheme	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Year										
Mean of *UTBadd*	0.198	0.160	0.150	0.131	0.131	0.122	0.137	0.141	0.148	0.183
Δ(D,D-1)		-0.038	-0.010	-0.019	0.000	-0.009	0.015	0.004	0.007	0.035
Δ(D,D-1)/Abs(D-1)		-0.192	-0.061	-0.128	0.000	-0.070	0.121	0.029	0.050	0.240
p-value: Δ=0		0.007	0.417	0.076	0.331	0.092	0.666	0.431	0.000	0.128
Industry										
Mean of *UTBadd*	0.175	0.173	0.156	0.121	0.122	0.133	0.147	0.144	0.183	0.215
Δ(D,D-1)		-0.002	-0.016	-0.035	0.001	0.012	0.014	-0.003	0.038	0.032
Δ(D,D-1)/Abs(D-1)		-0.010	-0.095	-0.226	0.007	0.095	0.105	-0.022	0.267	0.177
p-value: Δ=0		0.894	0.192	0.001	0.929	0.213	0.123	0.710	0.000	0.006
Industry-Year										
Mean of *UTBadd*	0.173	0.165	0.156	0.128	0.129	0.133	0.141	0.159	0.174	0.213
Δ(D,D-1)		-0.008	-0.009	-0.028	0.001	0.005	0.007	0.019	0.015	0.039
Δ(D,D-1)/Abs(D-1)		-0.047	-0.053	-0.181	0.009	0.035	0.053	0.133	0.094	0.221
p-value: Δ=0		0.550	0.481	0.011	0.911	0.621	0.433	0.042	0.127	0.001

Panel B: Firms Reporting Non-zero UTB Additions

	ROA decile									
Ranking Scheme	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Year										
Mean of *UTBadd*	0.439	0.272	0.207	0.180	0.176	0.190	0.188	0.193	0.231	0.280
Δ(D,D-1)		-0.167	-0.066	-0.027	-0.003	0.013	-0.002	0.005	0.037	0.050
Δ(D,D-1)/Abs(D-1)		-0.380	-0.242	-0.130	-0.018	0.075	-0.009	0.029	0.192	0.215
p-value: Δ=0		0.000	0.000	0.043	0.786	0.298	0.892	0.635	0.005	0.001
Industry										
Mean of *UTBadd*	0.406	0.290	0.205	0.180	0.175	0.182	0.187	0.200	0.234	0.297
Δ(D,D-1)		-0.116	-0.085	-0.025	-0.005	0.007	0.005	0.013	0.034	0.063
Δ(D,D-1)/Abs(D-1)		-0.286	-0.292	-0.124	-0.028	0.040	0.028	0.071	0.169	0.270
p-value: Δ=0		0.000	0.000	0.066	0.692	0.562	0.664	0.269	0.010	0.000
Industry-Year										
Mean of *UTBadd*	0.414	0.277	0.220	0.179	0.171	0.191	0.176	0.216	0.234	0.287
Δ(D,D-1)		-0.137	-0.057	-0.041	-0.007	0.020	-0.016	0.040	0.018	0.053
Δ(D,D-1)/Abs(D-1)		-0.330	-0.206	-0.187	-0.041	0.116	-0.081	0.229	0.082	0.227
p-value: Δ=0		0.000	0.001	0.004	0.544	0.103	0.186	0.001	0.188	0.001

This Table presents the univariate results from ranking firms by decile based on the value of *ROA*. For each decile, the mean value of *UTBAdd* is presented based on one of three different ranking schemes (year, industry, and industry-year). Appendix A contains variable definitions.

Table 3: Losses and Uncertain Tax Choices

Model:	**(1)**		**(2)**		**(3)**		**(4)**	
	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error
ROA^2	0.1453 ***	0.046			0.1165 **	0.047		
ROA	-0.0449	0.033	0.2915 ***	0.068	0.0422	0.036	0.1286 *	0.074
Loss			0.0401 ***	0.010			-0.0012	0.009
Loss*ROA			-0.4682 ***	0.076			-0.1981 ***	0.085
Age	-0.0013 ***	0.000	-0.0013 ***	0.000	0.0030	0.008	0.0031	0.008
Size	0.0251 ***	0.003	0.0270 ***	0.003	-0.0182	0.011	-0.0178	0.011
Big4	0.0444 ***	0.011	0.0439 ***	0.011	0.0185	0.016	0.0186	0.016
ForeignInc	0.2577 ***	0.069	0.2718 ***	0.070	0.0489	0.071	0.0554	0.072
R&D	-0.0030 **	0.001	-0.0031 **	0.002	0.0008	0.002	0.0009	0.002
Intang	-0.1180 ***	0.022	-0.1058 ***	0.021	-0.0742 *	0.040	-0.0692 *	0.041
Leverage	-0.0405	0.029	-0.0400	0.029	-0.0085	0.038	-0.0063	0.038
CDebt	-0.0855	0.053	-0.0958	0.053	-0.0067	0.080	-0.0062	0.080
STDROA	0.0164	0.010	0.0155	0.010	-0.0052	0.009	-0.0050	0.009
Zscore	-0.0003	0.001	0.0000	0.001	-0.0004	0.001	-0.0004	0.001
MtB	0.0016 **	0.001	0.0013 *	0.001	0.0006	0.001	0.0006	0.001
Intercept	-0.0418	0.086	-0.0961	0.082	0.1779	0.226	0.1630	0.227
Year Fixed Effects	Yes		Yes		Yes		Yes	
Industry Fixed Effects	Yes		Yes		No		No	
Firm Fixed Effects	No		No		Yes		Yes	
Observations	13,360		13,360		13,360		13,360	
Adjusted R-squared	0.075		0.080		0.581		0.581	

This Table reports OLS regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 4: Spline Regression Specification

Model:	**(1)**			**(2)**		
	Coefficient		Std Error	Coefficient		Std Error
β_1: ROA < 0	-0.2094	***	0.031	-0.0686	*	0.037
β_2: ROA ≥ 0	0.1788	***	0.059	0.1321	**	0.067
F-statistic: $\beta_1 - \beta_2 = 0$	28.85			5.97		
p-value: $\beta_1 - \beta_2 = 0$	<0.01			0.01		
Control Variables	Yes			Yes		
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			No		
Firm Fixed Effects	No			Yes		
Observations	13,360			13,360		
Adjusted R-squared	0.079			0.581		

This Table reports spline regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 5: Losses and Heightened Enforcement Risk

Model:	**(1)**			**(2)**		
HighEnforce Variable:	*HighCIC*			*NOLCB*		
	Coefficient		Std Error	Coefficient		Std Error
Loss	0.0427	***	0.008	0.0456	***	0.009
HighEnforce	-0.0171		0.018			
Loss*HighEnforce	-0.0616	***	0.023	-0.0375	***	0.014
Age	-0.0012	***	0.000	-0.0013	***	0.000
Size	0.0264	***	0.004	0.0237	***	0.003
Big4	0.0420	***	0.011	0.0466	***	0.011
ForeignInc	0.2681	***	0.071	0.2776	***	0.071
R&D	-0.0001		0.001	-0.0004		0.001
Intang	-0.1261	***	0.022	-0.1254	***	0.022
Leverage	-0.0379		0.030	-0.0341		0.029
CDebt	-0.0711		0.054	-0.0717		0.054
STDROA	0.0235	**	0.011	0.0249	**	0.010
Zscore	0.0002		0.001	0.0001		0.001
MtB	0.0018	**	0.001	0.0017	**	0.001
Intercept	-0.0597		0.091	-0.0273		0.090
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
Observations	13,360			13,360		
Adjusted R-squared	0.071			0.068		

This Table reports OLS regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 6: Prior Losses and Future Settlements

Model:	**(1)**		**(2)**		**(3)**	
	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error
$Loss_{t-1}$	-0.0062	0.005	-0.0040	0.005	-0.0036	0.005
$Loss_{t-2}$			-0.0070	0.004	-0.0052	0.005
$Loss_{t-3}$					-0.0064	0.004
ROA	0.0250	0.024	0.0225	0.024	0.0207	0.024
Age	0.0003 **	0.000	0.0003 **	0.000	0.0003 **	0.000
Size	0.0110 ***	0.002	0.0108 ***	0.002	0.0107 ***	0.002
Big4	0.0060	0.006	0.0061	0.006	0.0061	0.006
ForeignInc	-0.0121	0.035	-0.0132	0.035	-0.0149	0.035
R&D	-0.0044	0.004	-0.0042	0.003	-0.0041	0.003
Intang	-0.0130	0.011	-0.0138	0.011	-0.0144	0.011
Leverage	0.0100	0.014	0.0104	0.014	0.0107	0.014
CDebt	-0.0807 ***	0.026	-0.0807 ***	0.026	-0.0804 ***	0.026
STDROA	-0.0072 **	0.004	-0.0063 **	0.004	-0.0044	0.004
Zscore	0.0006 *	0.000	0.0006 *	0.000	0.0007 **	0.000
MtB	0.0000	0.000	0.0000	0.000	0.0000	0.000
Intercept	-0.0956 ***	0.022	-0.0912 ***	0.022	-0.0876 ***	0.021
Industry Fixed Effects	Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes	
Observations	8,908		8,908		8,908	
Adjusted R-squared	0.032		0.032		0.032	

This Table reports OLS regression results where the dependent variable is *Settle* in a sample of only profitable firm-years. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 7: Alternative Measures for Uncertain Tax Choices

Model:	**(1)**			**(2)**		
Dependent Variable:	*STDHS*			*UTBaddS*		
	Coefficient		Std Error	Coefficient		Std Error
ROA	0.0231	***	0.003	0.0892		0.146
Loss	0.0021	***	0.001	0.0845	***	0.024
Loss*ROA	-0.0913	***	0.005	-0.6221	***	0.186
Age	0.0000	***	0.000	-0.0043	***	0.001
Size	-0.0020	***	0.000	0.0634	***	0.007
Big4	-0.0023	***	0.001	0.1134	***	0.029
ForeignInc	0.0043		0.004	0.1020		0.263
R&D	0.0155	***	0.002	0.0309	***	0.010
Intang	-0.0112	***	0.001	-0.2121	***	0.054
Leverage	-0.0023		0.002	-0.0465		0.091
CDebt	0.0085	***	0.003	-0.1535		0.139
STDROA	0.0040	***	0.001	0.0674	*	0.038
Zscore	0.0002	***	0.000	-0.0045		0.003
MtB	0.0003	***	0.000	0.0005		0.002
Intercept	0.0339	***	0.003	0.1258		0.479
Industry Fixed Effects	Yes			Yes		
Year Fixed Effects	Yes			Yes		
Observations	21,578			13,360		
Adjusted R-squared	0.382			0.126		

This Table reports OLS regression results where the dependent variables are alternative measures of uncertain tax choices. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 8: Alternative Measures for Income and Loss

Model:	**(1)**			**(2)**		
Loss and ROA Based on:	*Taxable Income*			*Income Net of Special Items*		
	Coefficient		Std Error	Coefficient		Std Error
ROA	0.1352	***	0.048	0.2920	***	0.068
Loss	-0.0143		0.011	0.0417	***	0.011
Loss*ROA	-0.6332	***	0.221	-0.4935	***	0.080
Age	-0.0014	***	0.000	-0.0013	***	0.000
Size	0.0214	***	0.003	0.0273	***	0.003
Big4	0.0458	***	0.011	0.0433	***	0.011
ForeignInc	0.1922	***	0.069	0.2392	***	0.068
R&D	0.0008		0.001	-0.0035	**	0.002
Intang	-0.1299	***	0.022	-0.1012	***	0.021
Leverage	-0.0228		0.029	-0.0382		0.029
CDebt	-0.0441		0.053	-0.0937	*	0.053
STDROA	0.0254	**	0.011	0.0148		0.010
Zscore	0.0012	*	0.001	0.0000		0.001
MtB	0.0017	**	0.001	0.0011		0.001
Intercept	-0.0048		0.082	-0.1003		0.084
Industry Fixed Effects	Yes			Yes		
Year Fixed Effects	Yes			Yes		
Observations	13,360			13,360		
Adjusted R-squared	0.071			0.080		

This Table reports OLS regression results where the dependent variables are alternative measures of uncertain tax choices. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 9: Alternate Samples and Specifications

Model:	**(1)**		**(2)**	
	Coefficient	Std Error	Coefficient	Std Error
ROA	0.2487 ***	0.088	0.1867 ***	0.067
Loss	0.0371 ***	0.012	0.0210	0.030
Loss*ROA	-0.2810 ***	0.100	-0.3244 ***	0.075
Age	-0.0013 ***	0.000	-0.0012 ***	0.000
Size	0.0264 ***	0.004	0.0222 ***	0.004
Big4	0.0357 ***	0.012	0.0293 **	0.012
ForeignInc	0.3109 **	0.156	0.8766 ***	0.119
R&D	0.0006	0.002	0.0172	0.018
Intang	-0.1002 ***	0.027	-0.0994 ***	0.023
Leverage	-0.0818 **	0.034	-0.0637 **	0.032
CDebt	-0.0870	0.073	-0.1130 *	0.061
STDROA	0.0010	0.001	0.0034	0.009
Zscore	-0.0025	0.009	-0.0006	0.001
MtB	0.0008	0.001	0.0012	0.001
Intercept	-0.1427 ***	0.055	-0.0487	0.079
Sample	Propensity Score Matched		Full	
Industry Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
Fully Interacted Control Variables with *Loss*	No		Yes	
Observations	4,674		13,360	
Adjusted R-squared	0.062		0.093	

This Table reports OLS regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 10: Uncertain Tax Choices by ROA Band

Model:	**(1)**			**(2)**			**(3)**		
Absolute Value of ROA Limited to:	*35%*			*25%*			*15%*		
	Coefficient		Std Error	Coefficient		Std Error	Coefficient		Std Error
ROA	0.2540	***	0.068	0.2728	***	0.074	0.0813		0.093
Loss	0.0367	***	0.010	0.0362	***	0.010	0.0239	**	0.011
Loss*ROA	-0.5298	***	0.098	-0.5899	***	0.121	-0.4057	**	0.181
Age	-0.0011	***	0.000	-0.0011	***	0.000	-0.0009	***	0.000
Size	0.0259	***	0.003	0.0251	***	0.003	0.0204	***	0.003
Big4	0.0313	***	0.010	0.0260	**	0.011	0.0312	***	0.011
ForeignInc	0.4531	***	0.076	0.4626	***	0.082	0.5181	***	0.097
R&D	-0.0031	*	0.002	-0.0023		0.002	0.0067		0.006
Intang	-0.0864	***	0.020	-0.0817	***	0.021	-0.0646	***	0.020
Leverage	-0.0749	***	0.027	-0.0910	***	0.027	-0.0752	***	0.029
CDebt	-0.1305	***	0.050	-0.1781	***	0.048	-0.1678	***	0.051
STDROA	0.0066		0.008	0.0082		0.009	0.0137		0.010
Zscore	-0.0002		0.001	-0.0010		0.001	-0.0020	*	0.001
MtB	0.0019	***	0.001	0.0024	***	0.001	0.0020	**	0.001
Intercept	-0.0847		0.081	-0.1324	**	0.059	-0.0933		0.058
Industry Fixed Effects	Yes			Yes			Yes		
Year Fixed Effects	Yes			Yes			Yes		
Observations	12,323			11,519			9,704		
Adjusted R-squared	0.087			0.090			0.081		

This Table reports OLS regression results where the dependent variable is *UTBadd*, and the sample varies by the number of observations included in each band of *ROA*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 11: Uncertain Tax Choices and Loss Persistence

Model:	**(1)**		**(2)**	
	Coefficient	Std Error	Coefficient	Std Error
Loss	0.0238 **	0.010		
Prior3Loss	0.0008	0.010		
Loss*Prior3Loss	0.0236	0.014		
$Loss_{t-1}$			0.0151	0.011
$Loss_{t-2}$			0.0056	0.011
$Loss_{t-3}$			-0.0103	0.012
Controls	Yes		Yes	
Sample	Full		Loss Firms	
Industry Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
Observations	13,360		4,452	
Adjusted R-squared	0.071		0.052	

This Table reports OLS regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.

Table 12: Losses and Sources of Uncertainty

Model:	**(1)**		**(2)**	
	Coefficient	Std Error	Coefficient	Std Error
ROA	0.2098 ***	0.065	0.1118	0.077
Loss	0.0469 ***	0.013	0.0409 ***	0.014
Loss*ROA	-0.3556 ***	0.073	-0.2562 ***	0.087
Loss*R&D	-0.0205	0.018	-0.0131	0.014
Loss*Intang	0.0019	0.032	-0.0170	0.038
Loss*ForeignInc	-0.9575 ***	0.148	-0.5102 **	0.224
ROA*R&D			0.4315 *	0.246
ROA*Intang			-0.2971	0.282
ROA*ForeignInc			3.6185 **	1.417
Loss*ROA*R&D			-0.4371 *	0.246
Loss*ROA*Intang			0.3803	0.309
Loss*ROA*ForeignInc			-3.5964 **	1.425
Age	-0.0012 ***	0.000	-0.0011 ***	0.000
Size	0.0215 ***	0.003	0.0210 ***	0.003
Big4	0.0463 ***	0.011	0.0471 ***	0.011
ForeignInc	0.8655 ***	0.118	0.4139 **	0.181
R&D	0.0176	0.018	0.0065	0.014
Intang	-0.1108 ***	0.023	-0.0766	0.031
Leverage	-0.0322	0.029	-0.0356 **	0.029
Cdebt	-0.1070 **	0.052	-0.1060	0.052
STDROA	0.0149	0.010	0.0144	0.010
ZScore	0.0000	0.001	-0.0001	0.001
MtB	0.0013 *	0.001	0.0013 *	0.001
Intercept	-0.0597	0.078	-0.0599	0.074
Year Fixed Effects	Yes		Yes	
Industry Fixed Effects	Yes		Yes	
Firm Fixed Effects	No		No	

Observations	13,360	13,360
Adjusted R-squared	0.092	0.094

This Table reports OLS regression results where the dependent variable is *UTBadd*. Robust standard errors are clustered by firm. ***, **, and * correspond to two-tailed significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are reported in Appendix A.