Alternative Book-based Taxes and Earnings Management

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Abstract:

We create a stylized model of firms' earnings management and tax avoidance decisions when taxes are levied on taxable income, and then alternatively levied on book income. The predicted effect of an alternative book-based tax on earnings management depends on the relative importance of scrutiny costs and the tax rates involved. Next, we use a difference-in-differences test to estimate the effect of the Corporate Alternative Minimum Tax (CAMT) on earnings management. Contrary to pre-passage concerns about increased downward earnings management, we find mixed evidence indicating unchanged or increased upwards earnings management by affected firms. Our model suggests that pre-passage concerns about downward earnings management underappreciated that (1) book-tax scrutiny already exerted indirect downward pressure on earnings management before CAMT, and/or (2) upwardly managed earnings might enjoy preferential tax rates after CAMT. Thus, this study provides a framework to evaluate tax policy that comingles financial accounting measures with traditional tax bases.

Keywords: CAMT, book-tax differences, tax avoidance, earnings management

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1. Introduction

In 2022, Congress passed the Inflation Reduction Act, which contained a provision for the Corporate Alternative Minimum Tax (CAMT) to take effect for tax years starting after December 31, 2022. In contrast with prior alternative minimum taxes that were based on adjusted *taxable income*, the new base for this alternative tax is a firm's adjusted *financial statement income,* which is also referred to as *book income*. The purpose of this study is to examine the effect of an alternative tax on book income on firms' earnings management behavior. We examine this question both theoretically and empirically. Theoretically, we model the reporting decisions of managers both with and without an alternative tax on a firm's reported book income and generate predictions of how it might distort firm reporting. Empirically, we test the model's predictions by estimating whether the enactment of a book-based alternative tax affected firms' earnings management. Taken together, both aspects of this paper inform the questions of whether and how book-based taxes distort financial reporting.

The potential for book-based taxes to distort financial reporting is important enough that 264 academic accountants (including one author of this study) signed an open letter of concern to Congress about the matter (Francis 2021).[1] Among the risks cited about using financial accounting as a basis for tax law, the letter argued "that companies will alter their reporting and report lower financial accounting earnings than they would in the absence of this tax." Signatories further argued such manipulation could then lead to lower earnings quality, less useful information for capital market participants, and less efficient allocation of capital. This study examines the theoretical basis for reporting distortions and conducts ex-post analysis on

[1] A copy of the that letter and the list of signatories is available at: https://tax.kenaninstitute.unc.edu/news-media/open-letter-of-concern-from-264-accounting-academics-regarding-including-financial-accounting-income-in-the-tax-base/

the important question of whether these early concerns regarding earnings management have been realized in the aftermath of the CAMT's implementation.

To build up to understanding how book-based taxes might distort financial reporting and markets, we focus on modeling the most primitive question of how tax incentives affect earnings management. We create a baseline setting wherein taxes are levied on taxable income. A manager must make decisions about the costly manipulation of both book income (i.e., earnings management) and taxable income (i.e., tax avoidance) in order to maximize their own welfare. The manager benefits from a high reported book income, but a low reported taxable income. In our approach, book-tax differences are modeled as being costly to the manager, representing their potential to induce costly scrutiny both from investors and from tax authorities. These book-tax scrutiny costs become the central feature of the model that determines the interplay between earnings management and tax avoidance.

The idea that book-tax differences can invite scrutiny is well supported by the literature. Hanlon (2005) finds that large book-tax differences are associated with lower earnings persistence, and investors use them as a signal of lower earnings quality. Meanwhile, Mills (1998) finds that large book-tax differences are associated with larger proposed IRS audit adjustments, which suggests book-tax differences may invite greater IRS attention. Taken together, these studies suggest that book-tax differences can invite scrutiny from multiple outside parties. This multi-party scrutiny undermines the potential effectiveness of both earnings management and tax avoidance, thus linking the two decisions.

Including scrutiny costs from book-tax differences in the model results in several insights. First, earnings management and tax avoidance are negatively related – the natural tension created by scrutiny costs leads the manager to make a tradeoff between earnings management and tax avoidance rather than to fully pursue both. Second, if book-tax scrutiny costs are positive, then the degree to which managers internalize tax costs into their earnings management decisions is inversely related to the cost of manipulating taxable income. In the extreme, if manipulating taxable income is costless to the manager, then the manager fully internalizes tax costs in their earnings management behavior, acting as though they were taxed directly on each dollar of additional reported earnings. This insight arises because every change in reported book income will optimally lead to a corresponding change in taxable income when taxable income can be flexibly changed. At the other extreme, if manipulating taxable income is impossible or prohibitively costly, then the manager will view tax costs as sunk and ignore tax considerations completely when making their earnings management decision. These results show that even when tax burdens are not a function of book income, earnings management is still affected by tax avoidance incentives.

Having established the baseline case where taxes are levied on taxable income, we continue our analysis by implementing an alternative tax on book income within our model. In this second version of the model, we replace the existing standard statutory rate on taxable income with a tax on book income. The tax rates on book and taxable income can differ. Although taxable income is no longer used as the firm's effective tax base, the firm still reports taxable income to the tax authority. (This assumption is consistent with tax authorities' regular practice of requiring reconciliations among different accounting bases.) The continued reporting of traditional book-tax differences (and the continued existence of associated scrutiny costs) are still generated based on the differences between reported book income and taxable income. We find that after making these changes, several insights from the model change. For instance, we find that the tendency for taxable income to adapt to and comove with book income becomes even stronger because it is no longer counterbalanced by the tax incentive to keep taxable income low. We also find that the degree to which the firm internalizes tax incentives into its earnings management decisions is no longer dependent on book-tax scrutiny or tax manipulation costs, since the direct tax on managed earnings means that tax considerations are fully internalized regardless. Thus, the addition of an alternative book income tax changes the analysis in two key respects. First, if the tax rate on book income differs from the original statutory rate on taxable income, then the marginal tax rate faced by the manager will change. Second, tax costs will shift from only indirectly affecting earnings management through scrutiny of book-tax differences to directly affecting earnings management through the minimum book income tax.

In order to gauge the overall effect of an alternative tax on book income on firms' earnings management behavior, we generate the conditions under which including an alternative book income tax will increase or decrease earnings management. We find that when the tax rate on book income is equal to the tax rate on taxable income, an alternative tax on book income will always decrease earnings management as long as both scrutiny costs and tax manipulation costs are greater than zero. This is because the manager goes from partially to fully internalizing tax costs into their earnings management decision as a result of the new alternative tax. However, if the tax rate on book income is lower than the standard tax rate on taxable income, earnings management can increase if the tax manipulation cost is small relative to scrutiny costs. This arises from the fact that a low tax manipulation cost implies that tax costs are already incorporated into earnings management decisions before the alternative tax on book income is implemented. As such, the lower marginal rate spurs upward earnings management, while the direct tax on managed earnings does little to further internalize tax costs or incentivize downward earnings management. Thus, although the differences between the two models fail to give an unambiguously signed prediction of what would happen to earnings management when an alternative book-based tax is imposed, they do suggest that the empirical effect of an alternative book income tax on earnings management will be informative about the extent to which tax costs were already internalized prior to the new tax's implementation.

Armed with these theoretical insights, we move to our empirical analysis. We first test the baseline model's prediction that, due to book-tax scrutiny, a firm's tax avoidance and earnings management are negatively associated. In the 3-year period prior to the CAMT's enactment, we estimate the association between unrealized tax benefits and discretionary accruals among U.S. multinationals. Using two different earnings management models, we find evidence broadly consistent with a negative association between discretionary accruals and our measure of tax avoidance, which matches the baseline model's prediction.

Next, we examine the effect of implementing an alternative book income tax on earnings management by using the recent adoption of the CAMT at the end of 2022 to perform a difference-in-differences analysis. We follow Blouin and Born (2024) and use public data to approximate a set of firms that are subject to CAMT. We compare discretionary accruals of firms above and below the AFSI[2] threshold before and after the implementation of the CAMT. Across a variety of specifications, we fail to find evidence of increased downward earnings management among affected firms following the implementation of CAMT. In fact, using some models (e.g., Modified Jones) we find evidence that affected firms increased upwards earnings management. This increase implies that the reduction in the tax cost of earnings management that arises from

[2] Adjusted financial statement income. This alternative form of book income is used to determine which firms are subject to the CAMT and is used in the tax calculation for subject firms. Details for how AFSI is used in CAMT calculations are in Section 2. Details on how AFSI is constructed are in Appendix C.

preferential tax rates more than offsets the other increased tax costs of earnings management introduced by the new tax (i.e., the direct taxation of managed earnings).

Our theoretical and empirical analysis makes several contributions to literature. First, our model distills the primitive elements of a complex tax and accounting environment to capture the tradeoff between tax and financial reporting incentives. Thus, our model can serve as a useful starting point that could be extended for other questions regarding book-tax tradeoffs (e.g., how does increasing tax enforcement resources affect earnings management or how does increasing SEC enforcement affect tax reporting?). Second, our theoretical and empirical results showing a negative relation between a firm's tax avoidance and earnings management adds more recent evidence to the question in the literature of the nature of the relationship between earnings management and tax avoidance. Using an admittedly different sample and different proxies, Frank, Lynch, and Rego (2009) find a positive relation between firm-years with high levels of tax aggressiveness and high levels of financial reporting aggressiveness. Instead, our results are more consistent with Erickson, Hanlon, and Maydew (2004) who find that firms are actually willing to overpay their taxes in order to substantiate fraudulently overstated earnings. Third, our analysis provides valuable insight to the debate on book-tax conformity. While proponents of book-tax conformity point to the salutary effect of a forced tradeoff between earnings management and tax avoidance[3], our analysis shows that this tradeoff can exist even in the complete absence of mandated book-tax conformity. Our paper adds to the important conversation about how firm decisions regarding tax avoidance and earnings management interact with each other.

[3] See Desai and Dharmapala (2009) and Tang (2015).

This analysis also has implications for policymakers because of the potential inherent conflict between the goals of the IRS and the goals of the SEC. As the SEC strives to make reporting more useful by limiting the possibility for earnings management, managers may be more inclined to prioritize aggressive tax avoidance. Meanwhile, as the IRS attempts to crack down on aggressive tax planning strategies, it may incentivize managers to put more resources into earnings management instead. Thus, it may be the case that coordinated efforts would be more likely to be effective at reducing managerial manipulation of financial and tax reporting.

Our study is subject to several major caveats. First, our model is stylized in that we do not generate all elements from first principles (e.g., we rely on prior literature and assume scrutiny costs exist, but don't create a model wherein they arise endogenously). As with all models, there is a tradeoff between representativeness and tractability. Our goal is not to model every component of the CAMT; rather, it is to formalize intuition about the general interplay between book and tax reporting in a way that helps us generate useful predictions. We feel our model is helpful in that regard. Second, estimating which firms are subject to CAMT using public data is difficult and inherently noisy. Given the small number of treated firms subject to CAMT, our results are dependent on the methodology of Blouin and Born (2024) and subject to the limitations imposed by using public data. Despite these limitations, our study provides useful ex-post analysis on an important academic and policy issue.

2. Background

President Biden signed the Inflation Reduction Act into law on August 16, 2022, which contained a provision for a special tax called the Corporate Alternative Minimum Tax (CAMT). CAMT went into effect for tax years starting after December 31, 2022 (Internal Revenue Service, 2024). The legislative intent of CAMT was to crack down on profitable firms that managed to pay relatively little taxes, as a way to make them "pay their fair share" by subjecting them to a minimum tax on an adjusted form of their financial statement income of 15 percent (The White House, 2024). Put differently, the law was meant to ensure that firms with large, positive book earnings that were able maintain low amounts of taxable income would still be required to pay significant taxes. In this section, we explain the logic and intuition of which firms are subject to CAMT and the tax calculation for subject firms.

Whether a firm is subject to CAMT is determined by calculating the firm's adjusted financial statement income (AFSI) and then comparing it against a minimum threshold where the tax becomes effective. AFSI is an alternative form of book income that is meant to more closely resemble taxable income in certain ways by accounting for some known, important drivers of book-tax differences, such as pensions and depreciation. We describe our estimation of each firm's AFSI in detail in Appendix B. Once AFSI has been calculated, it is averaged over the previous three years (ending with the year prior to the current year), ignoring the effect of financial statement NOLs. In the event that this calculation exceeds \$1 billion, the firm will be subject to CAMT. Firms that are *subject to the CAMT* must then perform further calculations to determine whether they must actually *pay additional taxes under the CAMT*. Specifically, the minimum tax required by the CAMT is calculated by adding the effect of financial statement NOLs to the AFSI value and using the resulting figure as the firm's alternative tax base to which the 15 percent CAMT rate is applied (Internal Revenue Service, 2024). The firm is then required to pay the greater of its ordinary taxes due (i.e., 21 percent of its taxable income, generally speaking) and the minimum book income tax (15 percent of AFSI). If 15 percent of AFSI is smaller than ordinary taxes due, then the CAMT has no effect on the final tax calculation for the firm. To the extent that 15 percent of AFSI exceeds the firm's ordinary tax calculation, the difference is added to the firm's regular tax as an additional tax. The end result of the CAMT regime is that a firm pays 15 percent of its AFSI instead of 21 percent of its taxable income whenever the former is larger than the latter.

3. Theoretical Framework

3.1 Baseline Case Model

3.1.1 Model Setup – Baseline Case

We begin by modeling the interplay between tax avoidance and earnings management in a traditional tax system based on taxable income. Consider a manager who maximizes the following utility function by making two firm-level reporting decisions in a single period:

$$(1)\ \max_{EM,TA} U = \alpha(\mu + EM) + \beta\big(\mu - \tau(\mu - \varepsilon - TA)\big) - \frac{1}{2}\gamma EM^2 - \frac{1}{2}\theta TA^2 - \frac{1}{2}\delta(EM + \varepsilon + TA)^2$$

Here, let μ represent the exogenously determined true pre-tax book income earned by the firm in the absence of any manipulation.[4] EM is the amount of upwards earnings management the manager engages in, and $EM + \mu$ is total pre-tax income reported to shareholders. α is the utility the manager receives for each additional dollar of book earnings that they report, which could arise from appearing more impressive to investors or via an earnings-based compensation contract. γ is an earnings manipulation cost. The cost term $\frac{1}{2}\gamma EM^2$ reflects the idea that overstated earnings may become increasingly difficult to substantiate the further detached from reality they become. Ignoring other parts of the model, the manager seeks to optimize between the benefits of boosted earnings and the earnings manipulation cost.

[4] In general, it may be expected that managers can directly affect the firm's true income by, for example, engaging in costly effort to run the firm more effectively. Treating μ as exogenous in this model is tantamount to assuming that the manager can optimize real decisions and reporting decisions sequentially rather than jointly. While this may not always be the case, this simplifying assumption places the main tradeoffs at the focus of this model.

The firm also simultaneously reports taxable income to a tax authority. True taxable income, in the absence of any intentional manipulation, is equal to $\mu - \varepsilon$, where ε is an exogenous book-tax difference arising from natural differences between the tax and financial reporting systems (e.g., accelerated depreciation). Reported taxable income, however, is $\mu - \varepsilon - TA$, where TA is intentional tax avoidance designed to reduce reported taxable income. Thus, $\mu - \tau(\mu - \varepsilon - TA)$ is after-tax income, with τ representing the statuatory corporate income tax rate. β is the utility the manager receives for each additional dollar of after-tax income the firm produces. This utility benefit represents the idea that managers also benefit from improving the underlying financial condition (i.e., cash flows) of the company. In order to improve the financial condition of the company through tax avoidance, the manager must incur a tax manipulation cost, which is parametrized by θ. The term $\frac{1}{2}\theta TA^2$ reflects the fact that aggressive tax avoidance can become increasingly costly, requiring everything from shell companies to complex income pricing schemes to achieve. Thus, the manager must balance their preference for tax savings against the costs of manipulating taxable income.

The manager also faces expected scrutiny costs, parameterized by δ, that increase convexly in the size of the total book-tax difference. This assumption is a core feature of the model that binds the manager's tax avoidance and earnings management decisions together through their joint effect on the book-tax difference. Here, the total book-tax difference is equal to $EM + \varepsilon + TA$. This is reflective of the fact that investors, as well as the tax authority, cannot necessarily separate what portion of a large book-tax difference is the result of earnings manipulation, taxable income manipulation, or natural differences in financial and tax reporting. However, as the book-tax difference gets larger, the more suspect both the earnings and tax figures become, leading to greater scrutiny. As this scrutiny increases, managers face increased costs for several reasons. For one, if the market doubts the reliability of the financial statements, market dynamics may raise the firm's cost of capital and make advantageous loans harder to secure or lower the firm's valuation.[5] For another, if tax authorities doubt the legitimacy of reported taxable income they may engage in aggressive audit tactics that increase the probability of the firm being challenged on particular tax positions, which would divert the time and energy of firm leadership.[6] The parameter δ is meant to be inclusive of both the cost of market scrutiny and the cost of tax authority scrutiny.[7] The manager maximizes the objective function by choosing both a level of earnings management and a level of tax avoidance.[8]

3.1.2 Model Solution – Baseline Case

Due to the exogeneity of μ and ε to the model, solving (1) is mathematically equivalent to solving the following:

$$(2)\ \max_{EM,TA} U = \alpha EM + \beta\tau TA - \frac{1}{2}\gamma EM^2 - \frac{1}{2}\theta TA^2 - \frac{1}{2}\delta(EM + \varepsilon + TA)^2$$

This yields the following first-order conditions:

$$(3)\ \frac{\partial U}{\partial EM} = \alpha - \gamma EM - \delta(EM + \varepsilon + TA) = 0$$

$$(4)\ \frac{\partial U}{\partial TA} = \beta\tau - \theta TA - \delta(EM + \varepsilon + TA) = 0$$

These first-order conditions highlight the basic incentives at play. Equation (3) indicates the manager gains α at the margin for each unit of earnings management as a result of being able

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[5] See Francis, Nanda, and Olsson (2008) and Eliwa, Haslam, and Abraham (2016).

[6] This characterization is one interpretation of the Mills (1998) result that large book-tax differences are associated with greater tax audit adjustments.

[7] The use of a single parameter δ constitutes another simplifying assumption, as it implies that scrutiny costs associated with the market and scrutiny costs associated with the tax authority are simply additive (such that $\delta = \delta_{market} + \delta_{tax\ authority}$), and that they don't depend on any of the other parameters in the model.

[8] Here we assume that the manager can independently manipulate both taxable income and financial statement income, meaning that instances of book-tax conformity built into the financial and tax reporting systems are assumed to not be an impediment to the manager's reporting strategy.

to report a higher earnings number to shareholders. However, marginal gains from tax avoidance in Equation (4) are only $\beta\tau$ since they are only accrued through tax savings. Additionally, while the model contains separate costs for both earnings manipulation and tax manipulation, scrutiny costs enter both conditions in the same way – showcasing that both earnings management and tax avoidance can be limited by the incentive to keep taxable income and book income close together. Solving these conditions yields the following solution:

$$(6)\ EM^* = \frac{\alpha(\theta+\delta)-\delta\theta\varepsilon-\delta\beta\tau}{\delta\gamma+\theta(\delta+\gamma)}$$

$$(7)\ TA^* = \frac{\beta\tau(\gamma+\delta)-\delta\gamma\varepsilon-\delta\alpha}{\delta\gamma+\theta(\delta+\gamma)}$$

These optimality conditions demonstrate that earnings management and tax avoidance decisions are interdependent in several ways. First, tax manipulation costs appear directly in the solution for optimal earnings management (6), and the cost of earnings manipulation appears directly in the solution for optimal tax avoidance (7). The presence of both types of manipulations costs demonstrates that if one kind of manipulation becomes easier or harder it will affect both decisions. Moreover, the solutions for the two choice variables exhibit a symmetry that highlights the natural tension between the two decisions, as EM^* is increasing in α and decreasing in β and τ, while TA^* is decreasing in α and increasing in β and τ. In other words, managers must not only optimize earnings management and tax avoidance relative to their direct costs, but they must prioritize between them. When the marginal benefits of earnings management are larger, the manager will engage in more earnings management and less tax avoidance, while a larger benefit to tax avoidance will have the reverse effect. This phenomenon occurs because tax avoidance and earnings management decisions are linked together through their joint effects on the book-tax difference. Consistent with the arguments made by Hanlon and

Heitzman (2010), both increases to reported book income and decreases to reported taxable income will increase scrutiny if the other reported figure is left unchanged (i.e., if a book-tax difference is recorded). Hence, the manager must either accept an increase in scrutiny costs or else sacrifice one goal in pursuit of the other, either comoving taxable income upward to match their upwardly managed earnings or comoving reported earnings downward to match their reductions in reported taxable income. The manager's priorities between high book income and low taxable income, between impressing investors and achieving tax savings, will dictate that balance.

An easy way to illustrate that the interdependence is facilitated through scrutiny on the book-tax difference is to consider the case where there are no scrutiny costs, i.e., $\delta = 0$. In this case, $EM^* = \frac{\alpha}{\gamma}$ and $TA^* = \frac{\beta\tau}{\theta}$. In other words, the two reporting decisions become fully independent, and each are simply a function of the magnitudes of the direct benefits relative to the magnitude of the direct manipulation costs. It is only because of the market and tax authority scrutiny that is induced by larger book-tax differences that the two decisions become linked.

The manager's trade-off between earnings management and tax avoidance is also clarified by the simple case where the manager happens to face no natural net book-tax differences and where manipulation of taxable income is costless, such that $\varepsilon = 0$ and $\theta = 0$. Then, the solutions become $EM^* = \frac{\alpha - \beta\tau}{\gamma}$ and $TA^* = \frac{-\alpha + \beta\tau}{\gamma} + \frac{\beta\tau}{\delta}$. These expressions suggestion that if the manager tends to prioritize financial statement income such that $\alpha > \beta\tau$, then the manager's baseline decision is to offset any manipulated increases in reported earnings with a corresponding increase in taxable income that reduces scrutiny on the reported figures.[9] This

[9] A similar and opposite argument can be made in the case in which tax savings are prioritized over strong financial statements such that $\beta\tau > \alpha$. In this case, the manager pairs positive tax avoidance with downwardly managed earnings that reduce scrutiny, subject to an adjustment factor, so that their co-movement avoids scrutiny costs.

prediction is reminiscent of Erickson et al. (2004), which found that firms were willing to overpay their taxes in order to substantiate fraudulently overstated earnings.

In this simple case, the optimal levels of earnings management and tax avoidance are related so that $EM^* = \frac{\beta\tau}{\delta} - TA^*$. The degree to which the earnings management is fully offset, partially offset, or if the manager actually engages in active tax avoidance (i.e. $TA^* > 0$) thus depends on an adjustment factor $\frac{\beta\tau}{\delta}$, which balances the benefits of avoiding scrutiny with the direct financial costs of paying additional taxes. When scrutiny costs are overwhelming, $\frac{\beta\tau}{\delta}$ will be small and the manager will almost completely offset any positive earnings management with negative tax avoidance (i.e., overstatement of taxable income). When direct financial concerns are high, $\frac{\beta\tau}{\delta}$ will be larger and this offsetting dynamic will become weaker. Although the exact nature of this offsetting effect becomes more complicated when it is costly for the manager to manipulate taxable income and when the importance of scrutiny is affected by the baseline size of the exogenous book-tax difference (i.e. when $\theta > 0$ and $\varepsilon > 0$), the basic message remains the same: the model suggests managers have a basic tendency to prioritize either earnings management or tax avoidance, and to offset their aggression in one arena by being less aggressive in the other. Thus, even in a model with no tax on book income, there is still a book-tax conformity effect generated by the incentive to reduce scrutiny from tax authorities and market participants.

The theoretical robustness of the tradeoff between earnings management and tax avoidance incentives can be formalized by examining the correlation between EM^* and TA^* for a given firm across time. To calculate this, suppose that a firm's exogenous book-tax differences and the manager's weights on earnings and after-tax income are each randomly determined each year according to some density function, such that ε, β, and α are all realizations of distinct, independent, random variables.[10] This hypothetical portrays a world wherein the manager's priorities regarding earnings management and tax avoidance may change over time. For instance, the manager may place a higher weight on reported earnings in periods where a large number of shares or options are set to vest, and then place a higher weight on true after-tax income when facing binding financial constraints.[11] Suppose further that the cost parameters of the model (relating to earnings manipulation, tax manipulation, and book-tax scrutiny) are all positive constants bounded by one.[12] This range of cost parameters would be consistent with manipulation costs and scrutiny on book-tax differences differing from firm to firm, but remaining the same over time within firm.[13] These assumptions generate the following proposition:

Proposition 1: **Suppose that $\boldsymbol{\alpha}$, $\boldsymbol{\beta}$, and $\boldsymbol{\varepsilon}$ are all mutually independent and $\mathbf{0 < \delta, \gamma, \theta \leq 1}$. Then if $\mathbf{Var(\alpha) + \tau^2 Var(\beta) > Var(\varepsilon)}$, it follows that $\mathbf{Corr(EM^*, TA^*) < 0}$.[14]**

The intuition of Proposition 1 is that if the variance of the manager's weights on reported earnings and after-tax income is (collectively) larger than the variance of the size of the book-tax difference, then the manager's chosen amounts of earnings management and tax avoidance will be negatively correlated. This proposition reflects the fact that earnings management and tax

[10] It is also logical to think of a firm's pre-tax income, μ, as being drawn from a distribution, since income evolves non-deterministically from year to year. This has no bearing on the correlation between earnings management and tax avoidance, however, as μ does not appear in the formulae for EM^* and TA^*.
[11] Allowing exogenous book-tax differences to vary over time is also key to the robustness of the model, as allowing ε to be a known constant would allow both investors and the tax authority to back-out the precise level of earnings management and tax avoidance engaged in by the firm. This sort of unraveling would render the manager's efforts to manipulate reported taxable income or book income futile.
[12] Note that bounding γ, θ, and δ by one is without loss of generality since utility functions are not distorted by monotonic transformations. Furthermore, this convention results in very sensible and easy-to-interpret values.
[13] Proposition 1 assumes that τ is constant, consistent with it representing the statutory tax rate. Proposition 1 is robust to a version of the model where τ represents a marginal tax rate that changes over time for a given firm.
[14] The proof of this proposition can be found in Appendix C.

avoidance decisions are similarly affected by exogenous book-tax differences but are affected in opposite ways by the weights the manager puts on earnings versus after-tax income. Thus, if changes in the manager's reporting decisions from year to year primarily reflect the shifting priorities of the manager regarding earnings and after-tax income, the earnings management and tax avoidance decisions will tend to move in opposite directions. This insight leads us to the following hypothesis:

H1: Under the baseline case with no tax on book income, levels of earnings management and tax avoidance will be negatively associated within a given firm.

This hypothesis reflects the fact that in a variety of ways, the theory suggests that earnings management and tax avoidance compete with each other. We empirically test this hypothesis in Section 4.

3.1.3 Internalization of Tax Costs – Baseline Case

The special case where tax manipulation is costless (i.e., $\theta = 0$) yields an important insight about the internalization of tax costs into earnings management decisions that does not require any assumptions about the exogenous book-tax difference ε. As long as taxable income can be changed at no direct cost to the manager, optimal earnings management will take on the form $EM^* = \frac{\alpha - \beta\tau}{\gamma}$. Of particular interest here is that tax concerns enter directly into the earnings management solution, and that like financial statement concerns, they are subject to no discounts and are simply scaled by γ. In other words, the manager acts *as though* they were paying full taxes on each dollar of earnings management. This is because the condition $\theta = 0$ ultimately allows the manager to flexibly change their taxable income number to adapt to their earnings management strategy such that tax incentives are fully absorbed into the optimal reported book income. As the tax manipulation cost θ increases, this full internalization effect disappears, and tax considerations become less and less relevant to the earnings management decision. This can be seen by rewriting the earnings management decision in the following way:

$$(8)\ EM^* = \frac{\theta(\alpha-\delta\varepsilon)}{\delta\gamma+\theta(\delta+\gamma)} + \frac{\delta\alpha-\delta\beta}{\delta\gamma+\theta(\delta+\gamma)}$$

Note that the first term contains the tax manipulation cost θ in both the numerator and the denominator, but does not contain $\beta\tau$, which represents the manager's utility from saving money in taxes. The second term, however, contains θ only in the denominator, and contains $\beta\tau$. Like we saw before, setting $\theta = 0$ causes the first term to drop out and the second term to simplify to $\frac{\alpha-\beta\tau}{\gamma}$ such that tax considerations are fully absorbed. As tax manipulation costs tend towards infinity, however, something very different happens. In this case the first term can be rewritten as $\frac{\theta(\alpha-\delta\varepsilon)}{\delta\gamma+\theta(\delta+\gamma)} = \frac{\theta(\alpha-\delta\varepsilon)}{\theta(\delta+\gamma+\frac{\delta\gamma}{\theta})} = \frac{\alpha-\delta\varepsilon}{\delta+\gamma+\frac{\delta\gamma}{\theta}}$ which becomes $\frac{\alpha-\delta\varepsilon}{\delta+\gamma}$ in the limit. Meanwhile the second term goes to zero in the limit, meaning that tax considerations drop out of the earning management decision entirely. Intuitively, if taxable income cannot be changed (or if it is prohibitively costly to do so), then the manager will view tax costs as sunk and will make earnings management decisions without regard to taxes. Hence, the cost of tax manipulation determines the degree to which taxes are internalized in earnings management decisions. When tax manipulation is costless, the manager optimizes earnings management as if they were taxed directly on managed earnings. When tax manipulation is effectively impossible, the manager manages earnings as if taxes didn't exist.

3.2 Model with an Alternative Tax on Book Income

3.2.1 Model Setup – Case with an Alternative Tax on Book Income

The implementation of an alternative book tax (ABT) changes the incentive structure in some important ways.[15] Fundamentally, some firms will effectively be taxed on something more closely approximating their financial statement income, rather than their taxable income. As a simple baseline, we model a regime where firms are directly taxed on reported earnings and where taxable income is calculated and disclosed but is irrelevant to calculating a firm's required tax payments.[16]

$$(3) \max_{EM,TA} U = \alpha(\mu + EM) + \beta\big(\mu - \tau_{ABT}(\mu + EM)\big) - \frac{1}{2}\gamma EM^2 - \frac{1}{2}\theta TA^2 - \frac{1}{2}\delta(EM + \varepsilon + TA)^2$$

Here, the only changes relative to (1) are that taxes due are calculated using a tax base of $\mu + EM$, which is total book income reported to shareholders, and that the tax rate faced by the firm is the ABT rate instead of the ordinary statutory rate. Importantly, the term accounting for scrutiny costs is left unchanged. This reflects the reality that the real-world analogue of the ABT, the CAMT, is designed as a top-off tax – firms still file standard tax returns and pay standard corporate income taxes and are likely to still face scrutiny due to large book-tax differences. Further, Blouin and Born (2024) shown firms subject to CAMT made very few changes to their disclosures, which suggests market-based scrutiny of book-tax differences is likely to persist.

[15] Throughout section 3, we refer to an alternative book tax (ABT) as a generic, hypothetical, alternative tax based on book income. We do this to denote that our results are not fully specific to the CAMT itself. This abstraction makes the model more tractable and preserves the essence of the tradeoffs firms face under a book-based regime while also making it applicable to a wider set of potential tax policies.

[16] While this approach greatly simplifies the analysis and allows for clear insights, it does generate important limitations in relating our theoretical results to the CAMT. In particular, this theoretical approach does not account strategies whereby firms strategically aim to be above or below the 15 percent threshold established by the CAMT. Instead, it focuses the analysis on firms with systemically low ETRs that expect to be affected by the CAMT regardless of their reporting manipulations at the margins.

Additionally, the costs of tax manipulation are unchanged. Although the tradeoffs involved in manipulating taxable income are changed, it is still assumed to be costly to do so.

3.2.2 Model Solution – Case with an Alternative Tax on Book Income

Due to the exogeneity of μ and ε to the model, solving (3) is mathematically equivalent to solving the following:

$$(9)\max_{EM,TA} U = \alpha EM - \beta\tau_{ABT}EM - \frac{1}{2}\gamma EM^2 - \frac{1}{2}\theta TA^2 - \frac{1}{2}\delta(EM + \varepsilon + TA)^2$$

This leads to the following first-order conditions:

$$(10)\ \frac{\partial U}{\partial EM} = \alpha - \gamma EM - \beta\tau_{ABT} - \delta(EM + \varepsilon + TA) = 0$$

$$(11)\ \frac{\partial U}{\partial TA} = -\theta TA - \delta(EM + \varepsilon + TA) = 0$$

These conditions are similar those derived in the baseline case, except the main positive effect of tax avoidance is removed (manipulating taxable income no longer saves money on taxes), and tax costs now enter directly into the derivative with respect to earnings management, meaning tax costs now directly, rather than indirectly, impact earnings management. Note that the condition with respect to TA (11) now implies that if EM is positive, then TA must be negative (and vice versa). In other words, the tradeoff nature between the twin goals of strong financial statements and low taxes is only underscored and strengthened in the presence of the ABT, and the manager will either upwardly manage earnings to impress investors and raise taxable income in tandem to avoid scrutiny, or the manager will downwardly manage reported earnings to reduce taxes as they simultaneously limit scrutiny costs by lowering taxable income as well. Solving these conditions yields the following:

$$(12)\ EM^*_{ABT} = \frac{\alpha(\theta+\delta) - \delta\theta\varepsilon - \beta\tau_{ABT}(\theta+\delta)}{\delta\gamma + \theta(\delta+\gamma)}$$

$$(13)\ TA^*_{ABT} = \frac{\delta\beta\tau_{ABT} - \delta\gamma\varepsilon - \delta\alpha}{\delta\gamma + \theta(\delta+\gamma)}$$

The changes in the optimal levels of earnings management and tax avoidance relative to the non-ABT case are subtle but become clearly highlighted in the same special cases considered previously. Firstly, even when the scrutiny effect of book-tax differences is removed (i.e. when $\delta = 0$), the solution becomes $EM^*_{ABT} = \frac{\alpha - \beta\tau_{ABT}}{\gamma}$ and $TA^*_{ABT} = \frac{0}{\gamma\theta} = 0$, with taxes appearing in the numerator of the earnings management solution. In other words, scrutiny costs are no longer required for the manager to incorporate tax considerations into their financial reporting decisions. This reflects the fact that the firm is now taxed directly on managed earnings, as a higher reported financial statement income means a larger tax bill. Thus, even without scrutiny costs, whether earnings management is positive or negative will depend on how the manager weights the relative importance of financial reporting and tax incentives (i.e., the relative sizes of α and $\beta\tau_{ABT}$). Meanwhile, since taxable income no longer directly affects taxes owed, the lack of scrutiny costs means that the taxable income number itself is completely irrelevant, and manipulating it becomes pointless. Hence, tax avoidance (still defined here in terms of manipulations of taxable income reported to the tax authority) becomes zero.

The other special case, where there are no exogenous book-tax differences and tax manipulation is costless (i.e., where $\varepsilon = 0$ and $\theta = 0$), is also quite instructive. In the presence of the ABT, imposing these conditions changes the solutions to being $EM^*_{ABT} = \frac{\alpha - \beta\tau_{ABT}}{\gamma}$ and $TA^*_{ABT} = \frac{\beta\tau_{ABT} - \alpha}{\gamma}$. Note this is in fact equal to $-EM^*_{ABT}$. In other words, in the presence of the ABT, the adjustment factor is eliminated, and managers will act as though there is perfect book-tax conformity, fully offsetting all scrutiny costs imposed by increases or decreases in reported book income by increasing or decreasing reported taxable income by the same amount. This comes about because there is no longer direct financial incentive to reduce reported taxable income, meaning that the manager is fully incentivized to eliminate book-tax differences to reduce scrutiny. This effect is preserved even when there is an exogenous book-tax difference (i.e., $\varepsilon > 0$). Adding this change leaves EM_{ABT}^{*} unaffected while leading to the result $TA_{ABT}^{*} = \frac{\beta\tau_{ABT}-\alpha-\gamma\varepsilon}{\gamma}$, which is equal to $-EM_{ABT}^{*} - \varepsilon$. In words, these solutions suggest that taxable income is always adjusted such that book-tax differences become zero, including adjustments to account for the existence of natural, exogenous book-tax differences.[17] While this result becomes less extreme when manipulating taxable income is itself a costly endeavor, this analysis highlights that when reported taxable income is no longer the base used to calculate required tax payments, it instead serves exclusively (from the manager's standpoint) as a mechanism to reduce outside scrutiny by reducing book-tax differences.

3.2.3 Internalization of Tax Costs – Case with an Alternative Tax on Book Income

Unsurprisingly, this changing role of tax avoidance (in the sense of taxable income manipulations) also changes the way that tax costs are internalized into the earnings management decision. To analyze this, we rewrite the earnings management solution:

$$(14)\ EM_{ABT}^{*} = \frac{\theta\alpha-\delta\theta\varepsilon-\theta\beta\tau_{ABT}}{\delta\gamma+\theta(\delta+\gamma)} + \frac{\delta\alpha-\delta\quad{}_{ABT}}{\delta\gamma+\theta(\delta+\gamma)}$$

Note that if tax manipulation is costless such that $\theta = 0$, the first term again drops out and the second term simplifies to $\frac{\alpha-\beta\tau_{ABT}}{\gamma}$. This result for optimal earnings management is equivalent to the result found for the baseline case in Section 3.3 if the tax rate is the same (i.e., if $\tau_{ABT} = \tau$). This equality of terms is interesting for several reasons. First, it shows tax costs are

[17] This extreme example, while useful for pedagogical purposes, does not directly translate to the CAMT. This is because the CAMT would not come into effect if book-tax differences were zero.

fully internalized when tax manipulation is costless, regardless of which model is used. Second, because tax costs are already fully internalized regardless, the optimal earnings management is unaffected by taxing book income directly. Hence, the only reasons that earnings management changes as a result of the ABT are because tax manipulation *isn't* costless (i.e., $\theta > 0$) or because the tax rates are different (i.e., $\tau_{ABT} \neq \tau$). In other words, if the ABT affects earnings management, it's because of a tax rate effect or because tax manipulation costs prevented tax costs from being fully internalized in the baseline case.

To further illustrate the case where tax manipulation is costly, consider the limit of EM^*_{ABT} as θ approaches infinity (i.e., as tax manipulation becomes infinitely costly):

$$(15)\ \lim_{\theta \to \infty} EM^*_{ABT} = \frac{\alpha - \delta\varepsilon - \beta\tau_{ABT}}{\delta + \gamma}$$

Unlike in the baseline case, tax considerations are still heavily considered even when taxable income is effectively impossible to manipulate. This is intuitive, as the firm is now taxed directly on its managed earnings such that additional earnings management results in additional taxes. Thus, when tax manipulation costs are large, taxes go from being largely ignored for earnings management purposes in the baseline case to being heavily considered in earnings management decisions when an ABT is in effect.

3.3 Theoretical Effect of an Alternative Tax on Book Income

In addition to providing insight into the determinants of and trade-offs between earnings management and tax avoidance both in the absence and presence of an alternative tax on book income, these models also allow us to predict the potential effects that the implementation of an ABT has on the earnings management decisions of managers by directly comparing EM^* to EM^*_{ABT}. In particular, managers increase earnings management in response to the ABT if $EM^*_{ABT} > EM^*$, which, substituting in the previously derived solutions, gives:

$$(16)\ EM^{*}_{ABT} = \frac{\alpha(\theta+\delta) - \delta\theta\varepsilon - \beta\tau_{ABT}(\theta+\delta)}{\delta\gamma + \theta(\delta+\gamma)} > \frac{\alpha(\theta+\delta) - \delta\theta\varepsilon - \delta\beta\tau}{\delta\gamma + \theta(\delta+\gamma)} = EM^{*}$$

Simplifying (16) gives the following condition for upwards earnings management to increase when an ABT is enacted:

$$(17)\ \frac{\tau}{\tau_{ABT}} - 1 > \frac{\theta}{\delta}$$

This inequality showcases that the effect of an ABT on earnings management is indeed composed of a tax rate effect (which can expressed as $\frac{\tau}{\tau_{ABT}} - 1$) and a tax cost internalization effect (whose magnitude is proportional to $\frac{\theta}{\delta}$).[18] On the one hand, if the ABT rate is lower, then the tax rate effect is positive, such that the ABT increases earnings management. This condition is certainly met by the CAMT, which imposes a 15 percent alternative rate compared to an ordinary statutory rate of 21 percent. On the other hand, the tax cost internalization effect is unambiguously negative (i.e. reduces upwards earnings management), as tax costs are *always* internalized into earnings management when an alternative tax on book income is in effect, while the degree to which tax costs are internalized in the baseline case with no tax on book income depends on the tax manipulation cost θ.[19] If tax manipulation costs are low, then tax costs are already largely internalized without an alternative tax on book income, so the effect of implementing an ABT is small. If tax manipulation costs are large, then tax costs are not internalized in the baseline case, and the implementation of an ABT will reduce earnings management because of the direct tax on managed earnings. Hence, assuming $\theta > 0$ (i.e. tax manipulation is not costless), the two effects counteract each other – managers are inclined to

[18] Producing the fully simplified form in (6) requires the assumption that both β and δ are nonzero. If β is zero, however, it is easy to see that the existence of an ABT or lack thereof is irrelevant to the manager, as taxes are of no consequence if the manager places a zero weight on true after-tax economic income.
[19] See Section 3.1.3 and Section 3.2.3.

engage in downward earnings management because they have to pay taxes on it directly rather than indirectly on managed earnings, but they also are inclined to engage in more earnings management because the tax rate itself is lower. As such, the overall result of an ABT is ambiguous and depends on parameter values. In particular, the net result depends on whether the positive tax rate effect is positive (due to a lower ABT rate) and whether it is greater in magnitude than the negative tax cost internalization effect. Hence, we state our hypothesis regarding the implementation of one particular ABT, the CAMT, in the null form as follows.

H2: The implementation of the CAMT has no effect on the earnings management behavior of firms.

While the CAMT itself does not perfectly match every assumption of our model, this hypothesis is testable, and the results can still be interpreted in the context of our theory.

4. Empirical Analysis

4.1 Sample Selection

We begin our sample construction by selecting all firm-years from the Fundamentals Annual file in Compustat from 2020 to 2024, along with the prior year observations necessary to calculate lagged variables.[20] Our initial sample contains 63,429 firm-year observations for the 2020-2024 period. Next, we follow Blouin and Born (2024) in refining our sample.[21] We remove

[20] Compustat codes fiscal years according to which calendar year most of the fiscal falls within. Unless otherwise noted, we follow Compustat's coding throughout the analysis, as it better represents the actual time period during which the data are generated.

[21] We construct our sample to include firms that have all the data that will be needed later to follow the Blouin and Born (2024) methodology of identifying firms that are subject to CAMT. The code for Blouin and Borne (2024) is publicly available, which allowed us to closely follow their methodology and sample cuts. They report an estimate of firms subject to CAMT in 2022 and also an estimate of how much additional tax liability those firms will owe in the CAMT regime. They estimate that 80 firms would have had positive CAMT liability in 2022, compared to our estimate of 79. Of the 80 firms they identify, 69 appear on our list as well, with 23 firms where we estimate precisely the same amount of CAMT liability. After discussion with the authors, we think our minor discrepancy is due to either backfilling or changing names of certain variable tags in Calcbench. Once comfortable we have replicated their methodology, we apply that methodology to more recent years. As part of the roll forward, we also change our code slightly for the base period. In particular, in order to simulate the hypothetical long-run behavior of the CAMT in a typical year, Blouin and Born (2024) allow financial NOLs to originate as early as 2014. We instead

foreign firms by dropping firms that are headquartered or incorporated outside the United States according to Compustat. We remove noncorporate firms by dropping REITs (firms with an SIC code of 6798), firms with "Trust", "LP", or "LLP" in their name (as well as variations), and firms with 6-digit CUSIPs ending in "Y" or "Z".[22] We also drop observations not using the industrial format, observations where the fiscal-year-end month is missing, and duplicates on firm and year that are either missing net income or are created through changes in fiscal-year end. We then remove firms that are not publicly traded by removing observations where the calendar-year closing price is missing and remove subsidiaries by removing firms whose ticker contains a number. In order to remove firms that are excessively small and unlikely to be comparable to the large firms subject to CAMT, we also remove firm-years with total beginning (i.e. lagged) assets less than $10 million or total revenue less than $1 million.[23] This also has the additional effect of removing observations for which ratios using assets or revenue in the denominator are less likely to be reliable. We then remove observations missing data needed to calculate key variables, and winsorize all non-categorical regression variables at the 1 and 99 percent cutoffs. Lastly, we remove firms that only have one observation within the sample period. This results in a final sample of 13,741 firm-year observations representing 3,147 distinct firms. Table 1 reports the sample attrition for each of these major restrictions.

4.2 Estimating Earnings Management

The outcome of interest in this paper is earnings management. Earnings management, for our purposes, refers to instances where a manager proactively and strategically manipulates the firm's accounting for the sole purpose of increasing reported earnings. In our framework,

follow the actual text of the law by not allowing financial NOLs to originate before 2020, so as to better capture real-world observable effects.

[22] See Hoopes and Kindt (2022), FN 5.

[23] We also remove observations where beginning assets are missing at this stage.

manipulations leading to less reported earnings (which may occasionally be strategically optimal) are examples of "negative" or "downward" earnings management. So-called "real" earnings management, wherein the manager changes operations to improve reported earnings in the short term, are not an explicit focus of this paper. We follow prior literature and measure earnings management using a discretionary accruals approach that attempts to isolate changes in the non-cash portion of earnings that result from managerial discretion.

We estimate discretionary accruals by calculating a firm's operating accruals and then control for factors that predict non-discretionary accruals. To calculate operating accruals, we start with total income before extraordinary items, remove the results of discontinued operations, subtract net operating cash flow, then scale the difference by the firm's beginning assets. We focus on operating accruals because they are generally considered less reliable than other kinds of accruals (Richardson, Sloan, Soliman, and Tuna 2005) and thus may be more susceptible to manipulation. In order to control for non-discretionary accruals, we adapt a Modified Jones model and a Modified Dechow-Dichev model developed by Ahmed, Li, and Xu (2020). The baseline regressions for the Modified Jones and Modified Dechow-Dichev take the following forms: [24]

(R1) $Accrual_{it} = \beta_0 + \beta_1 InverseAssets_{it} + \beta_2 PPE_{it} + \beta_3 ChangeInSales_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \varepsilon_{it}$

(R2) $Accrual_{it} = \beta_0 + \beta_1 CFO_{it} + \beta_2 CFO_{it-1} + \beta_3 CFO_{it+1} + \beta_4 PPE_{it} + \beta_5 SalesDelta_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \varepsilon_{it}$

Here, (R1) is based off of the Modified Jones model, while (R2) is based off the Modified Dechow-Dichev model. In these regression equations, $Accrual$ refers to total operating accruals, $InverseAssets$ is the reciprocal of total assets (which helps control for denominator effects),

[24] Various uses of "β" throughout Section 4 of the paper are unrelated to theoretical parameter "β" used in Section 2. The same is true of uses of "ε" in Section 4.

PPE controls for the firm's plant, property, and equipment in order to account for depreciation accruals that are unlikely to be discretionary, and $ChangeInSales$ and $SalesDelta$ both account for changes in a firm's sales that could affect accruals but be unrelated to accounting discretion. In order to account for evolution of cash flows from operations (CFO) that could be driving observed accrual changes, CFO_t and CFO_{t-1} are included, as well as CFO_{t+1} where appropriate.[25] Additionally, we assign each firm-year ROA, sales growth, and market-to-book ratio quintiles, then include dummy variables for these quintiles as controls. Appendix A defines all variables, and Table 2 reports summary statistics.

4.3 Estimating Tax Avoidance

Within our model, tax avoidance refers to managers' efforts to manipulate taxable income to decrease required taxes.[26] This focus of this paper is on tax reporting decisions and positions taken on tax returns rather than tax avoidance facilitated by changes to a firm's investments or operations. Therefore, we measure tax avoidance through uncertain tax benefits (UTBs) rather than effective tax rates. Because UTBs are only generated by likely controversial tax positions, they are more likely to represent intentional tax avoidance. We define our UTB variable as changes in the firm's recorded UTB associated with tax positions taken the current year, scaled by beginning assets. This variable allows us to estimate the degree to which taxable income varies due to changes in controversial tax positions, hopefully capturing changes in deliberate tax avoidance. Summary statistics of this variable are available in Table 2.

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[25] Ahmed et al. (2020) also include CFO_{t+1} in their Modified Dechow-Dichev model, as shown in (R2). We do not include this variable in our regressions testing H2, as doing so would cause us to lose our final year of data, which is one of only two years of post-period data in our sample following the implementation of the CAMT. However, we do include CFO_{t+1} in tests of H1, which exclude the post period.

[26] Within our framework, manipulations that increase taxable income and taxes due are "negative" tax avoidance.

4.4 Regressing Earnings Management on Tax Avoidance (Test of H1)

We follow Chen, Hribar, and Melessa (2018) and examine the association between earnings management and tax avoidance using single-stage OLS regressions. Our dependent variable is an accruals measure, our independent variable of interest is UTB, and we control for the standard elements of two common discretionary accruals models.[27] Put differently, we run various versions of (R1) and (R2) while also including our proxy for tax avoidance as an additional independent variable. These regressions take the following forms:[28]

(R3) $Accrual_{it} = \beta_0 + \beta_1 UTB_{it} + \beta_2 InverseAssets_{it} + \beta_3 PPE_{it} + \beta_4 ChangeInSales_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_{ct} + \varepsilon_{it}$

(R4) $Accrual_{it} = \beta_0 + \beta_1 UTB_{it} + \beta_2 CFO_{it} + \beta_3 CFO_{it-1} \beta_4 CFO_{it+1} + \beta_5 PPE_{it} + \beta_6 SalesDelta_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_t + \varepsilon_{it}$

Here, i indexes firms and t indexes years. Thus, α_i represents a firm fixed-effect, while δ_t represents a year fixed-effect. UTB_{it} is used here as a proxy for intentional tax avoidance. We run each of these specifications both with and without fixed effects, yielding 2 specifications for each of (R3) and (R4), or 4 regressions total.[29] We cluster the standard errors at the firm level to account for serial correlation. Because we are estimating a baseline model, we estimate each specification using only the pre-CAMT period to avoid the effects of CAMT. For firms with a calendar fiscal year, we use fiscal years 2020 through 2022. For firms with a different fiscal-year end, we use fiscal years 2020 through 2023. These regressions allow us to test our baseline model's prediction that earnings management and tax avoidance should be negatively associated.

[27] While it is common in the literature to estimate discretionary accruals as the residuals from a first stage model like (R1) or (R2) and then to use that measure as the dependent variable in subsequent regressions, Chen et al. (2018) finds that this can lead to incorrect inferences if second and first stage regressors are correlated. One solution proposed by Chen et al. (2018) is to simply collapse everything into a single stage, which we do here.
[28] "α" and "δ" as used here are unrelated to the theoretical constructs discussed in Section 3.
[29] The prediction in H1 is focused on within-firm behavior, making specifications with fixed-effects the most direct test of the theory. The specifications without fixed effects are included for completeness.

The key coefficient of interest in both (R3) and (R4) is β_1. According to H1, β_1 should be negative as a result of the natural tension between earnings management and tax avoidance that's created by scrutiny on book-tax differences.

Table 3 tabulates the results of this analysis. The evidence is broadly consistent with our prediction that earnings management and tax avoidance are negatively associated. In particular, in Panel A, which reports the results of estimating (R3), we find a negative coefficient on UTBs that is significant at the 10 percent level when fixed effects are included, providing some evidence of our prediction in H1. We also find a coefficient on UTBs that is negative and significant at the 10 percent level when fixed-effects are not included, which may mean that variation in the manager's weights on reported and earnings and after-tax income remain an important factor in influencing earnings management decisions when looking across firms. In Panel B, which reports the results of estimating (R4), we do not find a statistically significant result when fixed effects are excluded, although we find that the coefficient on UTBs is negative and significant at the 5 percent level when fixed effects are included. Thus, the evidence suggests that firms act as if there is a natural tension between earnings management and tax avoidance, consistent with our within-firm theory that earnings management and tax avoidance objectives are in opposition due to scrutiny on book-tax differences.

4.5 Estimating Adjusted Financial Statement Income

Only a certain subset of large, profitable firms is subject to CAMT and access to private IRS data would be required to know precisely which firms are in this subset. To estimate which firms are subject to CAMT using public data, it is necessary to estimate a firm's adjusted financial statement income (AFSI). AFSI starts with net income, then makes adjustments so that AFSI will more closely resemble taxable income in certain ways by accounting for some known, important drivers of book-tax differences, such as pensions and depreciation. We closely follow the methodologies laid out by Blouin and Born (2024) and Hoopes and Kindt (2022) for estimating AFSI using public data. The details of this estimation are found in Appendix B.

4.6 Difference-in-Differences Analysis (Test of H2)

We use the passage of CAMT to test our second hypothesis. In particular, we exploit the fact that only some firms are subject to CAMT in order to perform a difference-in-differences analysis to compare how affected firms changed their earnings management after the CAMT's implementation relative to the concurrent change in non-subject firms.

We use Compustat data to determine if and when each firm is subject to the CAMT. Following Blouin and Born (2024), we define treated firms by putting constraints on each firm's AFSI and AFSI-based measure of their effective tax rate (AFSI ETR). For AFSI, we require a firm to have a three-year, backwards-looking average AFSI as of the time of treatment that is greater than or equal to $1 billion, which is the threshold stipulated by CAMT provisions. To reflect the fact that the CAMT operates as an alternative minimum tax of 15 percent of a firm's reported book income, we also require firms to have an AFSI ETR[30] of less than 15 percent at the time of treatment.[31] We set our treatment indicator, $Treat$, equal to one for all firms meeting both of these requirements in at least one year following the implementation of the CAMT. For control firms, we define our pre-post indicator variable, $Post$, to be equal to 1 starting in fiscal year 2023 for calendar year firms, and to be equal to 1 starting in fiscal year 2024 for firms with

[30] See Appendix B for details on the calculation of AFSI ETR.

[31] This designation has a side effect of excluding some firms from being marked as treated that may have actually changed their reporting behavior in order to avoid being subject to the CAMT. While this subgroup of firms may be interesting in its own right, my model in Section 3.4 better represents firms with low ETRs who are unlikely to cross the 15 percent threshold regardless of their reporting decisions. Thus, this empirical decision focuses the analysis to better align with the subset of observations about which my model makes predictions.

a non-calendar fiscal year.[32] For treated firms, we follow the same method, except that we do not set $Post$ equal to 1 unless the firm also fulfills the requirements be considered a treated firm in that same year. This definition ensures that no treated firm is treated as being post-treatment in a year when it is not directly impacted by the CAMT.

Following these definitions, we use a difference-in-differences analysis to estimate the effect of the CAMT on earnings management. We estimate the following models based off of a Modified Jones Model and a Modified Dechow-Dichev model:[33]

(R5) $Accrual_{it} = \beta_0 + \beta_1 Post * Treat_{it} + \beta_3 InverseAssets_{it} + \beta_4 PPE_{it} + \beta_5 ChangeInSales_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_t + \varepsilon_{it}$

(R6) $Accrual_{it} = \beta_0 + \beta_1 Post * Treat_{it} + \beta_3 CFO_{it} + \beta_4 CFO_{it-1} + \beta_5 PPE_{it} + \beta_6 SalesDelta_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_t + \varepsilon_{it}$

We estimate both (R5) and (R6) with and without the fixed-effects.[34] The variable of interest in both is β_1, which represents the differential change in earnings management for treated relative to control firms before and after the implementation of the CAMT. If the null *H2* is true, then $\beta_1 = 0$ and the CAMT had no effect on earnings management. $\beta_1 > 0$ would imply that the CAMT increased upwards earnings management for affected firms. In the context of our model, this would suggest that managers had already internalized much or all of their tax costs into their earnings management decisions, such that the main effect of the CAMT was a decrease in the marginal tax rate faced by the manager due to the lower CAMT rate. In terms of model parameters, this would be consistent with a low tax manipulation cost relative to scrutiny costs. If $\beta_1 < 0$, then this supports the conclusion that the CAMT increased downwards earnings

[32] This methodology relies on an assumption that firms' fiscal and tax years coincide. While this is often the case, instances in which fiscal and tax years diverge will cause measurement error in our analysis that will cause the magnitude of our estimated coefficients to be understated.
[33] CFO_{it+1} is excluded from (R6) since its inclusion would remove the only year of post-period data in the sample.
[34] In specifications where no fixed-effects are included, such that time-invariant and firm-invariant variables do not naturally drop out, the variables $Post$ and $Treat$ are also included in regression.

management, which was the initial concern about CAMT expressed by the academic accounting community. According to our model, $\beta_1 < 0$ would suggest that managers had previously not internalized tax costs into their earnings management decisions, such that the main effect of the CAMT was the shift towards direct taxes on managed earnings. In terms of parameters, this finding would be consistent with a high tax manipulation cost relative to scrutiny costs. Thus, the value of the coefficient β_1 not only answers the direct question about earnings management, but it also sheds light on the degree to which tax considerations were internalized into earnings management decisions before the CAMT regime.

Table 4 tabulates the results of estimating (R5) and (R6). In Panel A, we tabulate results from estimating (R5). We find that the coefficient on $Post * Treat$ is positive and significant at the 1 percent level when fixed effects are excluded, and positive and significant at the 5 percent level when they are included. In Panel B, we tabulate the results from estimating (R6). In both models, the coefficient on $Post * Treat$ is not significantly different from zero.

Taken together, these results do not support the concern from the academic accounting community that imposing a book-based tax would increase downward earnings management, and instead provide some evidence that firms increased upwards earnings management. Within our model, concern about increased downward earnings management is a sensical prediction that would arise if scrutiny costs were low or if book-tax considerations were not already impounded in earnings management decisions. However, this prediction is not supported by our estimates. Overall, these results suggest that predictions that taxing book income would increase downward earnings management overlooked the possibility that firms had already internalized the cost of high book-tax differences in their book reporting decisions in the absence of the book-based tax.

4.7 Robustness

A concern for any event-based difference-in-difference design is the possibility that the affected and control groups were already trending differently prior to the event, and any observed results are therefore merely a function of pre-existing movements (i.e., that the parallel trends assumption is violated). To mitigate this concern in the CAMT setting, we test for parallel trends by estimating the following regressions:

(R7) $Accrual_{it} = \beta_0 + \sum_{k=202}^{2023} \beta_{k-201} \; Post * Treat_{it} * I(year = k) + \beta_3 InverseAssets_{it} + \beta_4 PPE_{it} + \beta_5 ChangeInSales_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_t + \varepsilon_{it}$

(R8) $Accrual_{it} = \beta_0 + \sum_{k=2020}^{2023} \beta_{k-201} \; Post * Treat_{it} * I(year = k) + \beta_{12} Post + \beta_{13} CFO_{it} + \beta_{14} CFO_{it-1} + \beta_{15} PPE_{it} + \beta_{16} SalesDelta_{it} + ROA\ Dummies + Sales\ Growth\ Dummies + MTB\ Dummies + \alpha_i + \delta_t + \varepsilon_{it}$

We cluster standard errors by firm and estimate only the fixed-effect-inclusive specifications. In these regressions, $I(year = k)$ is an indicator function equal to one when $year = k$ is true. In other words, this creates a treatment estimate for each year in the sample. If the parallel trends assumption is valid, then only the coefficients associated with the years of actual treatment, 2023 and 2024, have the potential to be statistically significant. Significant coefficients in other years leading up to treatment could undermine the plausibility of the assumption that no differential effect would be observed in the absence of treatment. The results of these analyses are shown in Figure 1. Figure 1, Panel A indicates that discretionary accruals were different between CAMT and non-CAMT firms in 2020, but not 2021, and then diverged in 2023 and 2024. We do not know the specific reason for the 2020 difference, which could have some relation to the COVID-19 pandemic, but we are satisfied the observed post-period results in Panel A are not merely a continuation of a pre-CAMT trend. Figure 1, Panel B does not show that there are significant differences between groups for pre-treatment years. Overall, this suggests that the patterns seen in Table 4 are unlikely to be the result of pre-existing trends beginning prior to the CAMT's implementation.

An additional selection limitation in this paper is that firms have control over their earnings and thus can influence whether their AFSI will meet the $1 billion threshold. To the extent that our observed results are affected by the strategic choices of firms to be above or below the threshold due to selection into treatment and the control status, our estimates may be biased. We note, however, that the number of firms close enough to the threshold to be able to strategically manipulate their treatment status may be small. Additionally, the $1 billion threshold is based off of a three-year average, which limits the ability of firms to change their treatment status via manipulations made in a single year.

A final limitation of our empirical design is that our empirical tests of H1 are merely associations. Since (R3) and (R4) are simple OLS regressions with fixed effects, the assumption required to guarantee causality is relatively strong. In particular, it is that there are no unobservable factors that vary at the firm-year level that affect a firm's discretionary accruals and are correlated with tax avoidance behavior (or at least their UTBs). To the extent that this assumption is violated, any observed results will not be fully causal. At best, we offer evidence consistent with our theory and cannot use estimates of (R3) or (R4) as causal proof.

5. Conclusion

The implementation of an alternative book-based tax in the U.S. was a source of great concern. Many critics worried about increased downward earnings management and the associated degradation of financial information reported to capital markets. Therefore, understanding the competing incentives created by an alternative book-based tax, like the CAMT, has important implications for practice, policy, and academia. Previous research has argued that greater book-tax conformity deters earnings management and tax avoidance by forcing a tradeoff between the two.[35] Under this logic, an alternative book-based tax might be expected to reduce earnings management. Using both theoretical and empirical methods, this paper shows that the manger's response is more complex than this.

We develop a simple model of earnings management and tax avoidance and find that when large discrepancies between reported book and taxable income result in greater scrutiny costs to the manager, financial and tax reporting decisions become linked together through their joint effect on the book-tax difference. This scrutiny causes a forced tradeoff between book and tax considerations even in the absence of book-tax conformity, which changes the potential effect of an alternative tax on book income like the CAMT. In particular, we find that whether the alternative tax increases or decreases earnings management depends on the relative importance of book-tax scrutiny, and on whether the new tax is higher or lower than the legacy tax.

We then test this theory empirically, which yields several insights. First, contrary to studies that find earnings management and tax avoidance occur in tandem, we find evidence broadly consistent with our prediction that book-tax scrutiny creates a tradeoff that causes financial and tax aggressiveness to be negatively associated. Second, using a difference-in-differences approach to study the effects of the CAMT, we do not find evidence to suggest that the implementation of an alternative book-based tax increased the practice of downward earnings management. We acknowledge some of our estimates are non-results and these non-results could be due to offsetting effects within our theoretical model, low statistical power due to very limited post-period observations, or weak theory. Nevertheless, these results should assuage those concerned that CAMT would create large distortions that harmed capital markets.

[35] See Desai and Dharmapala (2009). Tang (2015) provides additional empirical evidence that book-tax conformity may decrease earnings management and tax avoidance.

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Appendix A: Variable Definitions

Variable Name	Description	Formula	Data source
Lagged Assets	A firm's beginning assets. Calculated as total assets (at) lagged by one period.		
Operating Accruals	Equal to income before extraordinary items (excluding the results of discontinued operations) less net operating cash flow scaled by total beginning assets.	(ib - do - oancf) / Lagged Assets	Compustat
Operating Cash Flow	Net operating cash flow scaled by total beginning assets. As per Ahmed et al. (2020), this variable is included in the Modified Dechow-Dichev model.	Scaled by assets: oancf / Lagged Assets	Compustat
Lagged Operating Cash Flow	Equal to Operating Cash Flow lagged by one period.		Compustat
Lead Operating Cash Flow	Equal to Operating Cash Flow led by one period.		
PP&E	Property, plant, and equipment scaled by total beginning assets. As per Ahmed et al. (2020), this variable is included in both the Modified Dechow-Dichev model, and the Modified Jones model.	ppent / Lagged Assets	Compustat
Sales Delta	Year-over-year change in sales, scaled by total beginning assets. As per Ahmed et al. (2020), this variable is included in the Modified Dechow-Dichev model.	(sale - sale[_n - 1]) / Lagged Assets	Compustat
Change in Sales	Year-over-year change in sales less the change in accounts receivable scaled by total beginning assets. As per Ahmed et al. (2020), this variable is included in the Modified Jones model.	(sale - sale[_n - 1] - recch) / Lagged Assets	Compustat
Inverse Assets	The reciprocal of beginning assets. As per Ahmed et al. (2020), this variable is included in the Modified Jones model.	1 / Lagged Assets	Compustat

Variable Name	Description	Formula	Data source
ROA	The ratio of net income to beginning assets.	ni / Lagged Assets	Compustat
Market-to-Book	The ratio of end-of-year market capitalization to common equity.	(prcc_f * csho) / ceq	Compustat
Sales Growth	Year-over-year percentage change in sales.	(sale - sale[_n - 1]) / sale[_n - 1]	Compustat
ROA Quintiles	A set of dummy variables equal to one if a given firm-year falls in the 1st, 2nd, etc. quintile of ROA. Quintiles are calculated across all observations. As per Ahmed et al. (2020), this set of dummy variables is included in both the Modified Dechow-Dichev model, and the Modified Jones model.		Compustat
Market-to-Book Quintiles	A set of dummy variables equal to one if a given firm-year falls in the 1st, 2nd, etc. quintile of Market-to-Book. Quintiles are calculated across all observations. As per Ahmed et al. (2020), this set of dummy variables is included in both the Modified Dechow-Dichev model, and the Modified Jones model.		Compustat
Sales Growth Quintiles	A set of dummy variables equal to one if a given firm-year falls in the 1st, 2nd, etc. quintile of Sales Growth. Quintiles are calculated across all observations. As per Ahmed et al. (2020), this set of dummy variables is included in both the Modified Dechow-Dichev model, and the Modified Jones model.		Compustat
UTB	Year-over-year change in a firm's uncertain tax benefit associated with tax positions taken in the current year scaled by total beginning assets. txtubposdec and txtubposinc are both set to 0 when missing.	(txtubposinc - txtubposdec) / Lagged Assets	Compustat

Variable Name	Description	Formula	Data source
AFSI	Adjusted financial statement income. This is an adjusted form of book income used in CAMT calculations. Details regarding its calculation are in Appendix B.		Compustat, Calcbench
AFSI ETR	A version of the firm's effective tax rate that is based on AFSI. Details regarding its calculation are in Appendix B.		Compustat, Calcbench
Three-Year AFSI	Three-year backwards-looking average of AFSI. This is used to determine which firms are subject to the CAMT.	(AFSI + AFSI[_n - 1] + AFSI[_n - 2]) / 3	
Post	An indicator variable designating periods after the implementation of the CAMT. For control firms, it is set equal to one for fiscal years starting after December 31, 2022. For treated firms, it is set equal to one for all fiscal years after December 31, 2022, for which the firm also fulfills the requirements in that same year to be considered a treated firm. This variable is included in difference-in-differences regressions.		Compustat
Treat	An indicator variable designating treated firms. It is set equal to one for firms with an AFSI ETR less than 15 percent and a Three-Year AFSI greater than $1 billion at the time that Post becomes equal to one.		Compustat
*Post * Treat*	The product of Post and Treat. This variable is the main variable of interest in difference-in-differences regressions.	Post * Treat	Compustat

Appendix B: Construction of Adjusted Financial Statement Income

Adjusted financial statement income (AFSI), is an adjusted form of financial statement income meant to more closely resemble taxable income by accounting for certain known drivers of book-tax differences. It is constructed using the following formula laid out by Hoopes and Kindt (2022):

$$\begin{aligned} AFSI = {} & Net\ Income + Federal\ Income\ Taxes + Foreign\ Income\ Taxes \\ & + Financial\ Statement\ Depreciation - Tax\ Depreciation - Amortization\ of\ Spectrum \\ & + Financial\ Statement\ Pension\ Expense - Tax\ Pension\ Deduction \\ & - Financial\ Statement\ NOL \end{aligned}$$

In other words, AFSI starts with net income, adds back federal and foreign income taxes, and then adjusts it for some key drivers of book-tax differences, including depreciation and pensions. AFSI also includes two more adjustments, it allows firms to subtract the amortization of Spectrum licensing rights, and it allows firms to account for prior losses by establishing the concept of a financial statement NOL. This last feature allows firms to go back as far as fiscal year 2020 to calculate AFSI losses and to carry them forward indefinitely to offset up to 80 percent of a current year's positive AFSI for tax purposes.[36] This feature is used to calculate taxes due as a result of the CAMT, but NOLs are not included for purposes of determining whether a firm exceeds the $1 billion AFSI threshold (Internal Revenue Service, 2024). Accordingly, we exclude financial statement NOLs from our baseline calculation of AFSI used to calculate each firm's three-year average but include it in our calculation of the AFSI ETRs used to identify firms impacted by the CAMT. Thus, AFSI as it is used in this paper refers to a value which is described by the following adjusted formula that excludes the effect of financial statement NOLs:

$$\begin{aligned} AFSI = {} & Net\ Income + Federal\ Income\ Taxes + Foreign\ Income\ Taxes \\ & + Financial\ Statement\ Depreciation - Tax\ Depreciation - Amortization\ of\ Spectrum \\ & + Financial\ Statement\ Pension\ Expense - Tax\ Pension\ Deduction \end{aligned}$$

To get to a form of income that is properly adjusted for taxes, we follow Blouin and Born (2024) by starting with pre-tax income ("pi" in Compustat) and subtracting out state and local taxes paid ("txs" in Compustat). In instances where state and local taxes are missing, we assume that they are zero. While this will understate state and local taxes in some instances, the effect is likely to be generally minor.

To make adjustments for the differences between depreciation expenses and depreciation deductions, we follow the methodology used by both Hoopes and Kindt (2022) and Blouin and Born (2024) by relying on Calcbench data on annual changes in deferred tax liabilities (DTLs) related to property, plant, and equipment (PPE), grossed up by the tax rate.[37] The XBRL tag that we use to identify DTLs relating to PPE is "DeferredTaxLiabilitiesPropertyPlantAndEquipment".[38] In cases where the Calcbench data is unavailable, we estimate the change in DTLs based on the firm's capital expenditures during that period. To do this, we calculate the ratio of the DTL change to a firm's capital expenditures in all cases where the Calcbench data is available and calculate the median ratio. We then multiply the actual capital expenditures of firms with missing Calcbench data by that same ratio and use that number as an estimate of the firm's change in DTLs relating to PPE.[39] We interpret an increase (decrease) in DTL has having a negative (positive) effect on AFSI. The resulting estimate allows us to account depreciation-related adjustments to net income that are included in AFSI.

Our next step in calculating AFSI is to make adjustments that better align financial statement income with the tax treatment of pension expenses. This step also takes advantage of Calcbench data to calculate annual changes in deferred tax assets (DTAs) relating to pensions, grossed up by the tax rate. Like Hoopes and Kindt (2022), we use

[36] In order to simulate the hypothetical long-run behavior of the CAMT in a typical year, Blouin and Born (2024) allow financial NOLs to originate as early as 2014, instead of 2020. We instead follow the actual text of the law in order to capture real-world observable effects.

[37] We define the tax rate to be the top statutory corporate income tax rate in any given firm-year. Variations across firms within year take place because there is a corporate tax rate change during the sample period, namely the TCJA. The Tax Cuts and Jobs Act (TCJA) went into effect for tax-years beginning after December 31, 2017. Because we assume that each firm has a tax year that matches their fiscal year, TJCA went into effect for calendar year firms during the 2018 fiscal year. For firms with other fiscal-year ends, the tax rate change takes place in fiscal year 2019. The tax rate we use before the TCJA goes into effect for a given firm is 35 percent, while the tax rate we use afterwards is 21 percent.

[38] This is the same XBRL tag used by both Hoopes and Kindt (2022) and Blouin and Born (2024).

[39] See Hoopes and Kindt (2022) and Blouin and Born (2024), who use the same method to account for missing Calcbench data.

the XBRL tag “DeferredTaxAssetsTaxDeferredExpenseCompensationAndBenefitsPensions”. We interpret an increase (decrease) in the DTA as an increase (decrease) in AFSI. We also follow Hoopes and Kindt (2022) in ignoring pension effects in cases where the Calcbench data is unavailable. This approach will understate the effect of pensions in some cases, but inasmuch as larger pension DTAs are more likely to be found in the data, it will still include pension effects where they matter most.[40]

We then account for the amortization of Spectrum licensing rights using data provided by Sullivan (2022). This paper notes that Spectrum amortization is concentrated in a small number of firms and details their Spectrum amortization as of 2021. Since the same data is unavailable following the year 2021, we assume that Spectrum amortization in years after 2021 is equal to amortization in the year 2021. While imperfect, this approach provides a reasonable estimate of Spectrum amortization for affected firms in later years.

Our calculation of AFSI sums net income with the effects of taxes, depreciation, pensions, and Spectrum amortization. The result is a value that is somewhat of a compromise between book and taxable income, and which is meant to line up with the IRS’s definition of AFSI for tax purposes. This figure is used in our analysis to calculate each firm’s three-year average AFSI at time of treatment so as estimate which firms are likely subject to the CAMT.

As a final step, we actually estimate which subject firms are likely impacted by the CAMT (i.e., owe CAMT-related taxes) by calculating an AFSI-based effective tax rate (AFSI ETR). This is calculated according to the following formula:

$$AFSI\ ETR = \frac{Baseline\ Taxes}{AFSI - Financial\ Statement\ NOL}$$

To calculate baseline taxes the firm would pay in absence of the CAMT, we follow Blouin and Born (2024) in starting with total taxes paid (txpd) less taxes paid to state and local governments (txs) as well as foreign taxes (“txfo” in Compustat) and then adjusting for the effect of general business credits and foreign tax credits.. To estimate general business tax credits, we follow Blouin and Born (2024) and Hoopes and Kindt (2022) in using the XBRL tags IncomeTaxReconciliationTaxCredits and EffectiveIncomeTaxRateReconciliationTaxCredits in Calcbench. Specifically, we compare the value given by the XBRL tag IncomeTaxReconciliationTaxCredits to the value given by the XBRL tag EffectiveIncomeTaxRateReconciliationTaxCredits multiplied by pre-tax income (“pi” in compustat) and use whichever is greater as the credits claimed. In all cases, we follow Hoopes and Kindt (2022) in using the absolute values of credits claimed and subtracting them from the tax values (such that credits are also tax-dcreasing). We then follow Blouin and Born (2024) in applying tax credit limitations to the general business credits. In particular, we calculate the general business credit (GBC) credit limitation as 75 percent of the sum of current and deferred federal income taxes (“txfed” and “txdfed” in Compustat) and 15 percent of the firm’s estimated AFSI. The general business credit we apply is then equal to the minimum of the credits claimed and the GBC limitation. To account for the foreign tax credit, we use foreign taxes from Compustat (txfo), subject to a foreign tax credit (FTC) limitation. We calculate the limitation as 15 percent of a firm’s foreign income (“pifo” in Compustat). In instances where foreign income is missing in Compustat, we use the XBRL tag “IncomeLossFromContinuingOperationsBeforeIncomeTaxesForeign” in Calcbench as a proxy.[41] We then set the foreign tax credit as the minimum of foreign taxes and the FTC limit. For both the FTC limit and the GBC limit, we set the value to 0 if it would otherwise be negative. We then complete the adjustment to baseline taxes by adding the GBC and FTC to the pre-credit value.[42]

Finally, to calculate financial statement NOLs, we use our own calculation of AFSI to determine AFSI losses and simulate how those losses would be brought forward through time up to the time of treatment. Since financial statement NOLs cannot be generated prior to 2020, we start by generating any AFSI losses in 2020 (or whenever their first loss year occurs after that point) and carrying them forward from there (Internal Revenue Service, 2024). In particular, we assume in each AFSI profit year, the firm offsets up to 80 percent of its AFSI profits using financial statement NOLs, with leftover NOLs carrying forward into the following year, consistent with IRS guidance (Internal Revenue Service, 2024). In subsequent AFSI loss years, the NOL account grows by the size of the loss. When years are missing in the middle of the sample, we use the most recent available financial statement

[40] Our treatment of pension adjustments also matches the methodology presented by Blouin and Born (2024).
[41] Blouin and Born (2024) also use Calcbench data to fill in missing values for foreign income. In correspondence with the authors, they described using a metric called “EBITForeign.” Our Calcbench data did not contain this variable, but do not believe this small discrepancy constitutes a substantial methodological deviation between our studies.
[42] The final formula for baseline taxes is then txpd – txs – txfo + GBC + FTC, where GBC and FTC are the general business credit and foreign tax credit discussed above.

NOL balance as a proxy for the account's balance in the previous year. The final AFSI ETR is the ratio of the baseline taxes to AFSI less any financial statement NOLs used in the current year. We identify treated firms by requiring them both to exceed the three-year average AFSI threshold, and to have an AFSI ETR below 15 percent. To avoid misleading instances where both the numerator and denominator of AFSI ETR are negative, we also require the value $AFSI - Financial\ Statement\ NOL$ to be positive in order for a firm to achieve treatment status.

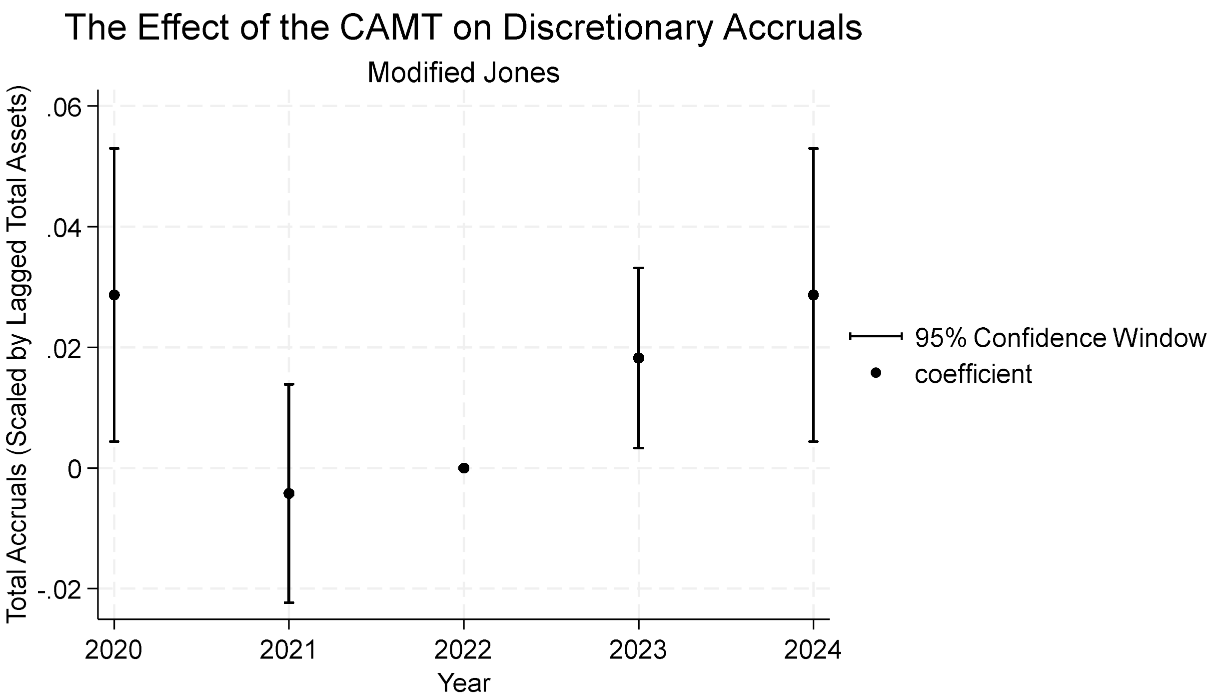
Appendix C: Proof of Proposition 1

Suppose that α, β, and ε are all mutually independent, $0 < \delta, \gamma, \theta \leq 1$, and $\mathrm{Var}(\alpha) + \tau^2\mathrm{Var}(\beta) > \mathrm{Var}(\varepsilon)$. Note that $Corr(\mathrm{EM}^*, \mathrm{TA}^*) = Corr\left(\frac{\alpha(\theta+\delta)-\delta\theta\varepsilon-\delta\beta\tau}{\delta\gamma+\theta(\delta+\gamma)}, \frac{\beta\tau(\gamma+\delta)-\delta\gamma\varepsilon-}{\delta\gamma+\theta(\delta+\gamma)}\right) = Corr\left(\frac{1}{\delta\gamma+\theta(\delta+\gamma)}(\alpha(\theta+\delta) - \delta\theta\varepsilon - \delta\beta\tau), \frac{1}{\delta\gamma+\theta(\delta+\gamma)}(\beta\tau(\gamma+\delta) - \delta\gamma\varepsilon - \delta\alpha)\right)$. However, recall that if X and $Y$are random variables, then $\forall a \in \mathbb{R}, Corr(aX, aY) = Corr(X, Y)$. Let $A = \alpha(\theta+\delta) - \delta\theta\varepsilon - \delta\beta\tau$ and let $B = \beta\tau(\gamma+\delta) - \delta\gamma\varepsilon - \delta\alpha$. Then, since $\frac{1}{\delta\gamma+\theta(\delta+\gamma)} \in \mathbb{R}$, it follows that $Corr(\mathrm{EM}^*, \mathrm{TA}^*) < 0 \iff Corr(A, B) < 0$. Further note that $Corr(A, B) = \frac{Cov(A,B)}{SD(A)SD(B)}$. Since $SD(A)SD(B) > 0$, we have that $Corr(\mathrm{EM}^*, \mathrm{TA}^*) < 0 \iff Cov(A, B) < 0$. Note that $\mathrm{E}[A] = (\theta+\delta)\bar{\alpha} - \theta\delta\bar{\varepsilon} - \delta\tau\bar{\beta}$ and that $\mathrm{E}[B] = \tau(\gamma+\delta)\bar{\beta} - \gamma\delta\bar{\varepsilon} - \delta\bar{\alpha}$. Hence, $Cov(A, B) = E[(A - E[A])(B - E[B])] = E\left[\left((\theta+\delta)(\alpha-\bar{\alpha}) - \theta\delta(\varepsilon-\bar{\varepsilon}) - \delta\tau(\beta-\bar{\beta})\right)\left(\tau(\gamma+\delta)(\beta-\bar{\beta}) - \gamma\delta(\varepsilon-\bar{\varepsilon}) - \delta(\alpha-\bar{\alpha})\right)\right] = \delta(\theta+\delta)\big(-Var(\alpha)\big) + \delta\tau^2(\gamma+\delta)\big(-Var(\beta)\big) + \delta^2\gamma\theta Var(\varepsilon) + \big(\delta^2\theta - \delta\gamma(\theta+\delta)\big)Cov(\varepsilon, \alpha) + \big(\delta^2\tau\gamma - \delta\theta\tau(\gamma+\delta)\big)Cov(\beta, \varepsilon) + \big(\delta^2\tau + \tau(\theta+\delta)(\gamma+\delta)\big)Cov(\alpha, \beta)$. However, since, α, β, and ε are all mutually independent, this simplifies to the following: $Cov(A, B) = -\delta(\theta+\delta)\big(Var(\alpha)\big) - \delta\tau^2(\gamma+\delta)\big(Var(\beta)\big) + \delta^2\gamma\theta Var(\varepsilon)$. Thus, to prove that $Cov(A, B) < 0$, we need to show that $\delta(\theta+\delta)\big(Var(\alpha)\big) + \delta\tau^2(\gamma+\delta)\big(Var(\beta)\big) > \delta^2\gamma\theta Var(\varepsilon)$. Note that since $0 \leq \delta, \gamma, \theta$, this equivalent to $\frac{\delta(\theta+\delta)(Var(\alpha))+\delta\tau^2(\gamma+\delta)(Var(\beta))}{\delta^2\gamma\theta} > Var(\varepsilon)$. This can be rewritten as$\left(\frac{1}{\delta\gamma} + \frac{1}{\gamma\theta}\right)Var(\alpha) + \tau^2\left(\frac{1}{\delta\theta} + \frac{1}{\gamma\theta}\right)Var(\beta) > Var(\varepsilon)$. Now recall that $\mathrm{Var}(\alpha) + \tau^2\mathrm{Var}(\beta) > \mathrm{Var}(\varepsilon)$. Since $\delta, \gamma, \theta \leq 1$, we have $\left(\frac{1}{\delta\gamma} + \frac{1}{\gamma\theta}\right)Var(\alpha) + \tau^2\left(\frac{1}{\delta\theta} + \frac{1}{\gamma\theta}\right)Var(\beta) > \mathrm{Var}(\alpha) + \tau^2\mathrm{Var}(\beta) > \mathrm{Var}(\varepsilon)$. Since $\left(\frac{1}{\delta\gamma} + \frac{1}{\gamma\theta}\right)Var(\alpha) + \tau^2\left(\frac{1}{\delta\theta} + \frac{1}{\gamma\theta}\right)Var(\beta) > Var(\varepsilon)$, we have that $Cov(A, B) < 0$, and hence $Corr(\mathrm{EM}^*, \mathrm{TA}^*) < 0$, as desired.

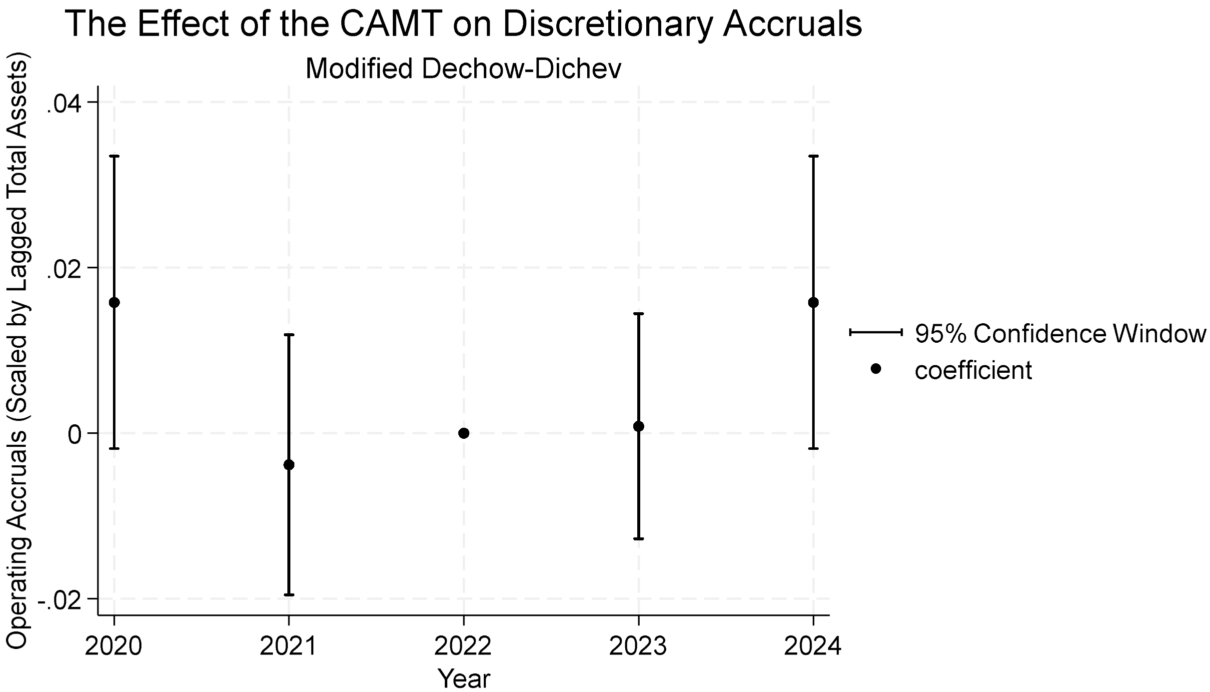
Tables and Figures

Figure 1

Panel A. Test of the Parallel Trends Assumption – Modified Jones



Panel B. Test of the Parallel Trends Assumption – Modified Dechow-Dichev



This figure reports results from estimating (R7) and (R8). Panel A shows the results for (R7), and Panel B shows the results for (R8). The figure shows the difference-in-differences coefficients associated with the $Post * Treat$ interaction variables for each year, along with their 95 percent confidence windows. 2022 is used as the omitted baseline year, while 2023 and 2024 are "treated" years. All variables are defined in Appendix A.

Table 1
Sample Selection

Starting Number of Firm-Years	**63,429**
Removed Firm-Years Missing Fiscal-Year-End Month	(51)
Removed Observations Not Using Industrial Format	(4,834)
Removed Firms Incorporated Outside the US	(16,945)
Removed Firms Headquartered Outside the US	(785)
Removed REITS and Trusts	(1,746)
Removed Firms with 6-Digit CUSIPS Ending in Y or Z	(1,429)
Removed LPs and LLPs	(452)
Removed Duplicates with Missing Net Income	(2)
Removed Duplicates Created Through Changes in Fiscal-Year-End	(29)
Removed Firms that are not Publicly Traded	(1,755)
Removed Subsidiaries	(87)
Removed Firm-Years Where Beginning Assets are Below $10 Million or Missing	(17,669)
Removed Firm-Years with less than $1 million in total revenue	(1,357)
Removed Observations with Insufficient Data to Calculate AFSI	(545)
Removed Observations with Insufficient Data to Calculate Regression Variables	(1,539)
Removed Singletons	(463)
Ending Number of Firm-Years	**13,741**

Notes: This table reports the attrition inherent in our sample selection process. Our initial data comes from Compustat North America for years 2009-2024. The sample restrictions imposed follow the spirit of Blouin and Born (2024).

Table 2
Summary Statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
AFSI (Billions of $)	0.64	0.02	4.41	-33.09	119.13
Beginning Assets (Billions of $)	19.22	1.66	142.77	0.01	4325.44
Operating Accruals	-0.06	-0.04	0.26	-13.39	13.50
Operating Cash Flows	0.04	0.05	0.17	-1.02	0.45
Property, Plant & Equipment	0.22	0.12	0.25	0.00	1.09
Sales Delta	0.05	0.02	0.21	-0.76	1.45
Change in Sales	0.06	0.02	0.24	-0.82	1.75
Uncertain Tax Benefit	0.00	0.00	0.00	0.00	0.01

The above variables (other than AFSI and Beginning Assets) are all scaled by Beginning Assets.

Table 3
Test of the Association Between Earnings Management and Tax Avoidance

Panel A: Modified Jones Model

	(1) Operating Accruals	(2) Operating Accruals
UTB	**-5.116***	**-10.95***
	(-1.842)	**(-1.932)**
Inverse Assets	0.276	-2.633
	(0.584)	(-0.857)
PPE	-0.0897***	0.00795
	(-4.904)	(0.128)
Change In Sales	0.0880	0.125**
	(1.400)	(2.273)
ROA Quintiles?	Yes	Yes
Market-to-Book Quintiles?	Yes	Yes
Sales Growth Quintiles?	Yes	Yes
Firm FE?	No	Yes
Year FE?	No	Yes
Observations	9,054	8,858
R-squared	0.074	0.465

Table 3 (continued)
Test of the Association Between Earnings Management and Tax Avoidance

Panel B: Modified Dechow-Dichev Model

	(1) Operating Accruals	(2) Operating Accruals
UTB	**-3.767**	**-11.59****
	(-1.354)	**(-2.047)**
Lagged CFO	0.0953	-0.000993
	(1.496)	(-0.0127)
CFO	-0.857***	-0.747***
	(-4.707)	(-5.893)
Lead CFO	0.124	0.238
	(1.334)	(1.438)
PPE	-0.0405**	-0.0384
	(-2.386)	(-0.638)
Sales Delta	0.0791	0.0910*
	(1.311)	(1.900)
ROA Quintiles?	Yes	Yes
Market-to-Book Quintiles?	Yes	Yes
Sales Growth Quintiles?	Yes	Yes
Firm FE?	No	Yes
Year FE?	No	Yes
Observations	9,054	8,858
R-squared	0.183	0.510

This table reports the coefficients and t-statistics (in parentheses) from estimating OLS regression models (R3) and (R34). Panel A shows results for (R3), while Panel B shows results for (R4). The variable of interest is firms' reported Unrecognized Tax Benefit (UTB). Firm and year fixed effects are included in column (2) but excluded in column (1). Quintile indicators, firm and year fixed effects, and the constant are all suppressed for brevity. In each regression, standard errors are clustered at the firm level. Statistical significance at the 1, 5, and 10 percent levels (two-tailed) are designated by *, **, and ***, respectively. All variables are defined in Appendix A.

Table 4
Test of the Effect of the CAMT on Earnings Management

Panel A: Modified Jones Model

	(1) Operating Accruals	(2) Operating Accruals
Post * Treat	**0.0168*** **	**0.0109** **
	(2.790)	**(1.983)**
Post	-0.00502	
	(-1.221)	
Treat	0.00215	
	(0.499)	
Inverse Assets	-0.0485	-3.731
	(-0.118)	(-1.456)
PPE	-0.0898***	-0.175
	(-5.350)	(-1.444)
Change In Sales	0.0834	0.105***
	(1.594)	(2.600)
ROA Quintiles?	Yes	Yes
Market-to-Book Quintiles?	Yes	Yes
Sales Growth Quintiles?	Yes	Yes
Firm FE?	No	Yes
Year FE?	No	Yes
Observations	13,741	13,741
R-squared	0.078	0.407

Table 4 (continued)
Test of the Effect of the CAMT on Earnings Management

Panel B: Modified Dechow-Dichev Model

	(1) Operating Accruals	(2) Operating Accruals
Post * Treat	**-0.00303**	**-0.000863**
	(-0.559)	**(-0.177)**
Post	0.00263	
	(0.629)	
Treat	0.00819***	
	(2.602)	
Lagged CFO	0.131**	0.0715
	(2.109)	(1.265)
CFO	-0.794***	-0.779***
	(-6.356)	(-6.881)
PPE	-0.0429***	-0.212*
	(-2.677)	(-1.666)
Sales Delta	0.0832	0.0946**
	(1.531)	(2.374)
ROA Quintiles?	Yes	Yes
Market-to-Book Quintiles?	Yes	Yes
Sales Growth Quintiles?	Yes	Yes
Firm FE?	No	Yes
Year FE?	No	Yes
Observations	13,741	13,741
R-squared	0.180	0.456

This table reports the coefficients and standard errors (in parentheses) from estimating difference-in-differences models (R5) and (R6). Panel A shows results for (R5), while Panel B shows results for (R6). The variable of interest is the interaction $Post * Treat$ (in bold). Firm and year fixed effects are included in column (2) but excluded in column (1). Quintile indicators, firm and year fixed effects, and the constant are all suppressed for brevity. In each regression, standard errors are clustered at the firm level. Statistical significance at the 1, 5, and 10 percent levels (two-tailed) are designated by *, **, and ***, respectively. All variables are defined in Appendix A.