Hedge Fund Activists and Financial Reporting Complexity: Evidence from the Valuation Allowance for Deferred Tax Assets

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September 2022

Abstract

This study examines whether hedge fund activists use and affect complex financial reporting. Specifically, we investigate whether hedge fund activists target firms with valuation allowances for deferred tax assets and whether target firms are more likely to release valuation allowances after an intervention. We find that the existence and magnitude of, as well as increases in, the valuation allowance are positively associated with the likelihood of a hedge fund activist intervention. We also find that activist interventions are positively associated with releases of valuation allowances in the year of the intervention and for the subsequent two years. Finally, we find that intervention firms' valuation allowance releases are driven, at least in part, by the subjectivity in ASC 740, rather than by real increases in firm performance. Overall, the evidence is consistent with the valuation allowance conveying decision-useful information to hedge fund activists and these investors using this information to unlock tax value in target firms.

Keywords: Accounting for Income Taxes; ASC 740; Deferred Tax Assets; Hedge Fund Activists; Valuation Allowance
JEL Codes: G23, G32, M41

We thank Adrienne DePaul (discussant), Frank Murphy, Casey Schwab, Susan Tang (discussant), the University of Connecticut Tax Readings Group, workshop participants at The Ohio State University, and conference participants at the 2022 ATA Midyear Meeting and 2022 AAA Annual Meeting for helpful comments. We also thank Wei Jiang for sharing hedge fund activist data, Erin Henry for sharing deferred income tax data, Peter Demerjian for sharing managerial ability score data, and Mayle Barr, Sarah Krasnecky, and Zhe Sun for data collection assistance. We gratefully acknowledge research support provided by the Fisher College of Business, the Mays Business School, and the W.P. Carey School of Business. All errors are our own.

1. Introduction

This study examines whether hedge fund activists use and affect complex financial statement disclosures. Regulators and practitioners alike are concerned about the increasing complexity of accounting information presented in firms' financial statements (KPMG 2011). Motivated by these concerns, a stream of studies finds that investors struggle to interpret complex financial statement information (e.g., Lawrence 2013; Miller 2010; You and Zhang 2009). However, this literature tends to overlook an important class of sophisticated investors—hedge fund activists. This is a significant omission because relative to other shareholders, hedge fund activists generate the highest rates of organizational change and performance increases within their target firms (Denes et al. 2017). Although hedge fund activists affect financial reporting quality in general, they are not accounting experts (Cheng et al. 2015). Thus, whether and to what extent hedge fund activists understand and influence complex financial accounting disclosures remains an important empirical question.

We address this issue by examining whether hedge fund activists incorporate the presence and magnitude of a firm's valuation allowance in their targeting decisions and whether activists influence the subsequent reporting of the target firm's tax benefits. While the financial statements contain a wide variety of complex accounting disclosures, the valuation allowance provides two unique advantages relevant to our research question. First, as a key accounting for income tax disclosure, the valuation allowance spans one of the most complex topics in financial reporting (Graham et al. 2012). Thus, the valuation allowance account provides a unique setting through which to investigate whether hedge fund activists understand complex accounting topics.

Second, the valuation allowance is an implicit forecast of managers' expectations about future profitability. Accounting Standards Codification Section 740 (ASC 740) requires firms to

create a deferred tax asset (DTA) to recognize expected future tax savings that arise from temporary unfavorable differences between book and taxable income. ASC 740 further requires managers to record a valuation allowance, a contra-asset, to reduce the value of the DTA if it is more likely than not that the DTA will not be fully realized. Managers determine whether a valuation allowance is needed, as well as its magnitude, based on their expectations about future taxable income. Hence, absent earnings management (e.g., Frank and Rego 2006; Schrand and Wong 2003), the presence of a valuation allowance reflects a manager's expectations about the firm's future performance.

To investigate our research question, we use Schedule 13D intervention data from Brav et al. (2008) and valuation allowance data from Capital IQ for the years 1995 through 2016. We first examine whether the presence and magnitude of a firm's valuation allowance is associated with the likelihood of a subsequent hedge fund intervention. Ex ante, it is unclear whether hedge fund activists are more likely to target firms based on valuation allowance disclosures. On one hand, prior research suggests that the valuation allowance provides a negative signal about a firm's expected future performance to market participants (e.g., Kumar and Visvanathan 2003). In addition, hedge fund activists do not target poor performance specifically, but rather, focus on firms with specific characteristics that may signal operating and managerial inefficiencies (Brav et al. 2008; Denes et al. 2017). As a result, the valuation allowance may signal to activist hedge funds that the firm has minimal prospects of improving performance, thereby reducing the likelihood that activist hedge funds target these firms.

On the other hand, activist hedge funds may view the presence and magnitude of a valuation allowance as an indicator of ineffective management. Indeed, anecdotal evidence indicates that hedge fund activists understand both the value inherent in DTAs and what

recognition of a valuation allowance implies about management's assessment of the firm's future profitability. For instance, in a recent investor presentation regarding Capital Senior Living Corporation's (NYSE: CSU) undervaluation, hedge fund activist investor Lucus Advisors LLC identified CSU's DTAs arising from federal and state NOL carryforwards as a key source of untapped value. Specifically, Lucus Advisors claimed that "These assets clearly have value; unfortunately, management has seemed unable to find a way to use them, recording a FULL valuation allowance against these and other of its net DTAs…"[1] To the extent that activist hedge funds view the valuation allowance as a credible signal of inefficiencies they could remedy to increase target firm value by realizing tax savings, we expect that activist hedge funds will be more likely to strategically target firms with a valuation allowance.

To examine the association between the valuation allowance and activist hedge fund interventions, we estimate a Probit regression and control for firm performance, growth opportunities, and other factors that prior research finds are associated with the likelihood of activist interventions (e.g., tax avoidance in Cheng et al. 2012). We find that hedge fund activists are more likely to target a firm when it has a valuation allowance, its valuation allowance is larger, or it records an increase in the valuation allowance balance. These results suggest that, unlike other capital market participants, hedge fund activists view the valuation allowance as a credible signal of managerial and operational inefficiencies that can be remedied to increase firm value. Moreover, this evidence complements Cheng et al. (2012) by showing that hedge fund activists incorporate the possibility of realizing future tax savings captured in the target firm's deferred tax assets into their investment decisions.

[1] See https://www.sec.gov/Archives/edgar/data/0001609583/000114036116048635/ex_3.htm.

We next examine whether hedge fund activist interventions are associated with subsequent valuation allowance releases. Prior research suggests that hedge fund activism improves several facets of target firm value, including operating performance, productivity, and return on assets (ROA) (e.g., Brav et al. 2008; Brav et al. 2015; Clifford 2008). To the extent that hedge fund activists increase target firms' operating performance, management may revise their expectation of future taxable income upward and subsequently release the valuation allowance reserve. Alternatively, given the discretion afforded by ASC 740, managers may place greater weight on subjective (as opposed to objective) evidence when determining the need for a valuation allowance. This may allow target firms to release their valuation allowances absent or despite other evidence. However, interventions may not be associated with valuation allowance releases if target firms exhibit high levels of accounting conservatism (Cheng et al. 2015) or hedge fund activists' focus on financial engineering and short-term performance improvements comes at the cost of long-term value (Jones 2009).

To investigate the relation between hedge fund interventions and valuation allowance releases, we use a difference-in-differences specification and entropy balancing to ensure treatment and control firms are similar on observable dimensions (Hainmueller 2012; Hainmueller and Xu 2013). We find that targeted firms are more likely to record a valuation allowance release following a hedge fund intervention, relative to matched control firms. We also find that this positive effect of activist interventions persists for up to two additional years after the year of the intervention.

We conduct two additional tests to investigate the mechanism through which valuation allowance releases occur. First, to test whether valuation allowance releases are driven by performance improvements, we examine whether target firms with valuation allowance releases

exhibit greater performance in the post-intervention period. We find little evidence that target firms with valuation allowance releases exhibit greater actual or expected performance following the intervention, relative to control firms. This evidence is inconsistent with targeted firms' valuation allowance releases being driven by performance improvements.

Second, we examine the relation between valuation allowance releases and the type of evidence existing at the time of the release, as defined by ASC 740. Specifically, we follow Goldman et al. (2022) and consider both subjective (e.g., tax planning opportunities and future taxable income) and objective evidence (e.g., cumulative loss history). We find that evidence of future taxable income driven by tax planning opportunities—one of the most subjective types of evidence—appears to play a greater role in valuation allowance release decisions for target firms, relative to control firms. In contrast, we find little evidence that the other evidence measures affect the likelihood of valuation allowance releases. Collectively, evidence from these analyses is consistent with target firms basing their valuation allowance releases at least partly on the discretion provided by ASC 740, rather than on real changes in operating performance.

Our paper makes three contributions. First, we contribute to the literature on investors' ability to use complex financial disclosures (e.g., Lawrence 2013; Miller 2010; You and Zhang 2009). Specifically, our findings suggest that hedge fund activists understand and use complex tax information to increase target firm value. In addition, by showing that hedge fund activists appear to target firms with valuation allowances, our study offers a new perspective on the consequences of financial statement disclosure complexity (e.g., Dyer et al. 2017).

Second and relatedly, this study contributes to the literature that examines the informativeness of the tax accounts and whether capital market participants incorporate tax-related information into their analysis or investment decisions (e.g., Bratten et al. 2017; Weber

2009). Prior research generally focuses on the pricing of tax information (Graham et al. 2012). We complement and extend this literature by examining whether a specific tax account, the valuation allowance, influences hedge fund activists' investment decisions. The Financial Accounting Standards Board's (FASB) recently proposed changes to increase the informativeness of accounting for tax disclosures—including the amount and explanation of the valuation allowance recognized and released during the reporting period.[2] Our findings inform these changes by showing that hedge fund activists, a sophisticated market participant, glean incremental information from the current valuation allowance disclosure.

Third, we contribute to the ongoing debate regarding whether hedge fund activists improve shareholder value. While several prior studies find that hedge fund activists improve firm value (e.g., Brav et al. 2008; Brav et al. 2015), others argue that these investors generate very few long-term benefits for target firms (Jones 2009; Greenwood and Schor 2009). Our findings are consistent with the latter view and suggest that hedge fund activists influence targets' financial reporting for tax policies through discretion iin ASC 740, rather than through real increases in firm performance.

The remainder of this paper proceeds as follows. Section 2 reviews prior research and develops our hypotheses. Section 3 describes our research design. Section 4 discusses the main results and Section 5 provides additional analyses and robustness tests. Section 6 concludes.

2. Background, Related Literature, and Hypothesis Development

2.1 Background and Overview of the Valuation Allowance Literature

ASC 740 requires a firm to recognize a DTA for future tax savings resulting from temporary differences between book and taxable income that are expected to reverse in the

[2] See https://www.fasb.org/Page/ProjectPage?metadata=fasb-Targeted%20Improvements%20to%20Income%20Tax%20Disclosures.

future. Although DTAs represent a wide range of future tax benefits, prior research suggests that tax credits and tax loss carryforwards typically comprise the largest portion of DTAs (Miller and Skinner 1998; Poterba et al. 2011). A firm may only realize the tax savings associated with a DTA to the extent it has sufficient taxable income of the appropriate character (capital or ordinary) and jurisdiction (federal, state, or foreign). Thus, a firm must establish a valuation allowance against DTAs when management believes it is more likely than not that the firm will not generate sufficient taxable income to realize the tax savings associated with the DTA.

Under ASC 740, managers must consider all sources of evidence about future taxable income when assessing the need for a valuation allowance. This includes positive evidence, such as taxable future income generated from tax strategies or future reversals of existing taxable temporary book-tax differences, and negative evidence, including a history of losses in recent years or an expectation of future losses (Spilker et al. 2020). As a result, the valuation allowance implicitly signals managers' expectations about the firm's future performance.

Several studies investigate whether the valuation allowance contains value-relevant information about future firm performance. For example, Miller and Skinner (1998) find that firms with greater expected future taxable income maintain smaller valuation allowances. Similarly, Axelton et al. (2019) document that changes in the valuation allowance predict changes in future earnings for five years and Dhaliwal et al. (2013) find that this disclosure provides incremental information about the persistence of losses for up to three years. Conversely, evidence in Finley and Ribal (2019) suggests that valuation allowance releases predict future earnings.

In addition, prior research investigates whether and how various firm stakeholders use the valuation allowance in their decision-making. For instance, Kumar and Visvanathan (2003)

document that investors use the valuation allowance to infer managers' expectations about future taxable income and the likelihood that DTAs will be realized. In addition, the valuation allowance also conveys useful information to those external to the firm. Edwards (2018) finds that the valuation allowance predicts future credit risk, suggesting that lenders view the recognition of this reserve as an indication of the firm's inability to repay future loans. Bakke et al. (2022) find that the existence and magnitude of valuation allowances, as well as changes in the valuation allowance, predict auditors' going concern opinions. Overall, this literature suggests that the valuation allowance conveys decision-useful information about future firm performance to users of the financial statements, including lenders, investors, and auditors.

2.2 Valuation Allowances and the Likelihood of Hedge Fund Activist Interventions (H1)

Prior research suggests that hedge fund activists target firms with specific characteristics that may signal the potential for value creation (Denes et al. 2017). For instance, Brav et al. (2008) find that hedge fund activists target firms that are low-growth, profitable, and have a lower Tobin's Q. Using U.S. census data, Brav et al. (2015) find that targets of hedge fund activists experience deteriorating plant productivity prior to the intervention, consistent with these investors strategically targeting firms with turn-around potential. Focusing on manager-level characteristics specifically, Francis et al. (2021) find that hedge fund activists target firms with management that is more likely to communicate and cooperate with them.

While the preceding discussion suggests that hedge fund activists focus on firms that have the potential to improve their performance, it is unclear, ex ante, whether hedge fund activism is associated with target firms' valuation allowances. On one hand, given that the valuation allowance reflects managers' expectation that the firm's performance will not improve in the future, the valuation allowance may signal to activist hedge funds that the firm has

minimal prospects of improving performance. Accordingly, activist hedge funds may be less likely to target firms with a valuation allowance.

On the other hand, activist hedge funds may view the presence and magnitude of a valuation allowance as a signal of ineffective management. For instance, in a Schedule 13D filing with the SEC regarding its investment in AirNet Systems, Pacific Coast Investment Partners argued that the firm's recognition of a valuation allowance in the quarter immediately following an additional write-down exemplified the CEO's mismanagement of the firm.[3] Similarly, Lucus Advisors LLC cited Capital Senior Living Corporation's recognition of a full valuation allowance and its inability to utilize the underlying DTAs as evidence of the firm's mismanagement.[4] To the extent that activist hedge funds view the valuation allowance as a credible signal of inefficiencies that they can remedy to increase target firm value by realizing tax savings, a valuation allowance may increase the likelihood of a hedge fund activist intervention. We state this hypothesis in the null as follows:

H1: The valuation allowance is not associated with hedge fund activist interventions.

2.3 The Effect of Hedge Fund Interventions on the Likelihood of Valuation Allowance Releases (H2)

Hedge fund activists use their unique combination of high-powered economic incentives, concentrated ownership, fewer conflicts of interest and regulatory restrictions, and work experience as investment bankers or research analysts to create efficiency gains at the target firm (Cheffins and Armour 2011; Brav et al. 2008). To achieve their stated objectives, hedge fund activists implement new business strategies, redirect corporate resources, and make corporate governance changes. For example, these investors may seek board representation, force buyouts

[3] See https://www.sec.gov/Archives/edgar/data/0001282982/000106880005000199/sched13d.txt.
[4] See https://www.sec.gov/Archives/edgar/data/0001609583/000114036116048635/ex_3.htm.

or sales of a division, or distribute cash on hand to shareholders through dividends and share repurchases (Brav et al. 2008; Brav et al. 2009; Klein and Zur 2011).

Several studies find that hedge fund activism is associated with increased target firm performance. For instance, Brav et al. (2008) find that target firms experience increases in dividend payout, increased CEO turnover, and increased operating performance post-intervention. Investigating the specific mechanism through which hedge fund activists affect firm performance, Brav et al. (2015) find that these investors increase value in target firms by reallocating corporate resources. Specifically, in the three years after intervention, target firms are associated with improvements in labor productivity and ROA and the disposal of poorly performing assets. Similarly, Clifford (2008) finds that firms targeted by hedge fund activists increase ROA in the year after intervention, driven by a reduction in under-performing assets.

Hedge fund activism may also affect whether target firms release their valuation allowances, although the direction of this effect is unclear, ex ante. On one hand, hedge fund activism may be positively related to the likelihood that a target firm releases its valuation allowance. ASC 740 allows a firm to release its valuation allowance when it is more likely than not that the firm will generate sufficient future taxable income to offset the DTA and realize the associated tax savings. As discussed above, hedge fund activists may implement changes at the target firm, resulting in increased profitability post-intervention. Consequently, managers may revise their expectations of future taxable income upward, leading the firm to subsequently release its valuation allowance. In addition, ASC 740 affords managers discretion in using subjective evidence to determine the need for a valuation allowance. Thus, activist investors may encourage managers to place greater weight on subjective evidence, potentially allowing target firms to release their valuation allowances absent or despite other evidence.

On the other hand, there are at least two reasons why hedge fund activist interventions may not be associated with the release of a firm's valuation allowance. First, Cheng et al. (2015) find that firms subject to an activist intervention exhibit higher levels of accounting conservatism following the intervention. Because accounting conservatism requires more timely recognition of losses (Basu 1997), this implies that the target firm may not have sufficient future taxable income to release its valuation allowance. As a result, the target firm may instead reduce future tax benefits by *increasing* its valuation allowance following an activist intervention.

Second, despite evidence that hedge fund activists' changes increase target firm value (e.g., Brav et al. 2008; Brav et al. 2015), critics argue that these investors focus on short-term value creation and financial engineering with very few meaningful real and long-term effects (Jones 2009; Greenwood and Schor 2009). Consistent with hedge fund activists reducing target firms' expenditures at the cost of long-term value, DesJardine and Durand (2020) find that target firms reduce labor and research and development expenses following hedge fund activist interventions and underperform non-target firms in the long run. Moreover, Klein and Zur (2011) find that hedge fund activist targets are more likely to experience a credit rating downgrade following the intervention, suggesting target firms may pose a higher default risk. Thus, hedge fund activists' short-term focus may dampen managers' expectations of future taxable income. This, in turn, may limit the extent to which target firms release their valuation allowances following the intervention. Collectively, this suggests that hedge fund interventions may not be associated with valuation allowance releases. Because we do not have a clear prediction, we state this hypothesis in the null as follows:

H2: Hedge fund interventions are not associated with valuation allowance releases.

3. Sample and Research Design

3.1 Data and Sample Selection

To investigate our research questions, we use hedge fund intervention data from Brav et al. (2008), financial statement data from Compustat, analyst information from I/B/E/S, institutional ownership data from Thomson Reuters' 13-F database, valuation allowance data from Capital IQ, and deferred tax asset and liability data from Green et al. (2022), Audit Analytics, and Calcbench, as supplemented by hand-collected data. We begin with all Schedule 13D hedge fund activist interventions from 1996 through 2014 collected by Brav et al. (2008). We use interventions beginning in 1996 to ensure consistent accounting for valuation allowances during our sample period and because hedge fund activist interventions were relatively rare prior to this period. We end our sample of activist interventions in 2014 due to data limitations. Following Cheng et al. (2012), we include one year pre-intervention and two years post-intervention, resulting in an overall sample period of 1995 to 2016. To the extent a firm experiences multiple hedge fund interventions during the sample period, we retain only the first intervention. We also exclude interventions without at least one non-targeted matched firm.[5] Finally, we require each firm to have data necessary to compute all control variables and valuation allowance variables. To mitigate the risk of outliers, we winsorize continuous variables at the 1st and 99th percentiles.

3.2 Empirical Models

3.2.1 Valuation Allowances and the Likelihood of Hedge Fund Activist Interventions Research Design

To examine the association between the valuation allowance and the likelihood of hedge fund activist interventions, we estimate the following Probit regression:

[5] To maximize the number of hedge fund activist interventions in our sample, we do not exclude utility and financial firms in our tests. However, results are similar to those reported in the paper if we exclude these firms from our sample (untabulated).

$$Pr(INTERVENTION_{i,t}) = \alpha_0 + \alpha_1 VA_{i,t-1} + \alpha_k HFACONTROLS_{i,t-1} + Industry\ FE + Year\ FE + \varepsilon_{i,t,} \quad (1)$$

where *INTERVENTION* is an indicator variable equal to one for years in which hedge fund activists intervene in the firm, and zero otherwise, *VA* represents the valuation allowance measures described below, and subscripts *i* and *t* represent firm and year, respectively.[6] Following Bakke et al. (2022), we construct three measures to examine valuation allowance existence, magnitude, and year-over-year increases. Specifically, we use an indicator variable (*POSVA*) equal to one for firm-year observations with a positive valuation allowance, and zero otherwise, the natural logarithm of the valuation allowance plus one *(LOGVA*), and an indicator variable (*VAINC*) equal to one if the current valuation allowance balance exceeds its prior value, and zero otherwise. To the extent that hedge fund activists target (do not target) firms with valuation allowances, we expect the coefficients on *POSVA*, *LOGVA*, and *VAINC* to be positively (negatively) associated with *INTERVENTION*, respectively.

We control for several firm-level characteristics associated with hedge fund activist interventions (*HFACONTROLS*). First, we control for tax avoidance (*CETR*), computed as cash taxes paid scaled by market value of assets (Henry and Sansing 2018), because Cheng et al. (2012) find that tax avoidance activities affect hedge fund activist targeting decisions.[7] We also include several firm-level characteristics that Brav et al. (2008) suggest may be associated with

[6] We use a Probit model when estimating equation (1) to be consistent with prior research (e.g., Brav et al. 2008; Cheng et al. 2015). However, the inclusion of fixed effects in nonlinear models can lead to biased inferences (see Wooldridge 2002). As Greene (2004) shows, linear estimation models with dichotomous dependent variables do not result in bias or inconsistency with respect to coefficients or standard errors. We find similar results if we re-estimate our analyses using a linear probability model (untabulated).

[7] We use cash taxes paid, rather than current or total tax expense (e.g., GAAP ETR) because valuation allowance releases are mechanically related to tax expense. Additionally, because requiring firms to have non-missing and non-negative pre-tax income reduces our sample of interventions in our unmatched (matched) sample by approximately 44 percent (60 percent) (untabulated), we scale cash taxes paid by the market value of assets and do not eliminate these firms from our sample (Henry and Sansing 2018). However, our main results are similar if we measure tax avoidance as cash taxes paid scaled by pre-tax income or cash taxes paid scaled by the common shares outstanding (Ayers et al. 2018) (untabulated).

the likelihood of a hedge fund activist intervention. This includes market value of equity (*MVE*), Tobin's Q (*Q*), sales growth (*SGROWTH*), return on assets (*ROA*), leverage (*LEV*), dividends (*DIVIDEND*), research and development expenditures (*R&D*), the Herfindahl-Hirschman index (*HHI*), analyst following (*AF*), and institutional ownership (*INST*). We include year and Fama-French 48 industry fixed effects and cluster standard errors by firm. All variables are defined in detail in Appendix A.

3.2.2 The Effect of Hedge Fund Interventions on Valuation Allowance Releases Research Design

To investigate whether firms release their valuation allowances following hedge fund activist interventions, we employ a difference-in-differences specification. Specifically, we identify treatment firms as those with hedge fund activist interventions anytime during the sample period and control firms as industry peers that do not experience an intervention. To mitigate the likelihood that results are driven by differences in industry, size, or pre-intervention valuation allowances, we match targeted firms to non-targeted firms within the same industry-year and valuation allowance and MVE quintiles in the year before the intervention.[8] We then compare the valuation allowance releases of treatment and control firms beginning one year before the intervention through two years post-intervention (Cheng et al. 2012) and estimate the following equation:

$$RELEASE_{i,t} = \alpha_0 + \alpha_1 TREAT_{i,t} + \alpha_2 POST_{i,t} + \alpha_3 TREAT * POST_{i,t} + \alpha_k CONTROLS_{i,t} + Industry\ FE + Year\ FE + \varepsilon_{i,t.} \quad (2)$$

RELEASE represents one of two dependent variables of interest: *RELEASEIND*, an indicator variable equal to one if the change in the valuation allowance from the prior period is less than zero, and zero otherwise and *RELEASERANK*, a ranked variable ranging from 1 to 4, where

[8] To ensure that the presence of zero-valuation allowance firms does not skew formation of the quintiles, we first partition the sample using only observations with a positive valuation allowance and subsequently assign observations without valuation allowances to the bottom quintile (e.g., see Samuels 2021).

larger values indicate a greater release in the valuation allowance.[9] We use weighted OLS (Tobit) regression for specifications where the dependent variable is *RELEASEIND* (*RELEASERANK*).[10] *TREAT* is an indicator variable equal to one for firms targeted by hedge fund activists during the sample period, and zero otherwise, and *POST* is an indicator variable equal to one for firm years ending after the intervention event, and zero otherwise. The coefficient on *TREAT * POST* represents the effect of activist interventions on the likelihood that firms subsequently release their valuation allowance. To the extent that firms release their valuation allowances following activist interventions, we expect the coefficient on *TREAT * POST* to be positively associated with both *RELEASEIND* and *RELEASERANK*.

We control for a variety of firm-level characteristics that may be associated with valuation allowance releases (*CONTROLS*). First, we control for cash ETRs (*CETR*) as tax planning activities may influence valuation allowance releases (Cheng et al. 2012). In addition, we follow Dhaliwal et al. (2013) and include return on assets (*ROA)*, the absolute value of the change in ROA (|Δ*ROA*|), annual sales growth (*SGROWTH*), firm age (*AGE*), research and development expenditures (*R&D*), the number of quarters of sequential losses (*LOSSEQ*), firm size (*MVE)*, dividend policy (*DIVDUM* and *DIVSTOP*), cash flow from operations before extraordinary items (*CASHFLOW*), negative special items (*NEGSPIW*), non-operating losses (*NEGNOP*), income statement losses for unusual and nonrecurring items (*NEGGLIS*), losses on

[9] Given that changes in the valuation allowance are highly right-skewed, we compute rankings two through four (i.e., terciles) using percentiles of observations that report a decrease in the valuation allowance from the prior period and then assign observations with no reported decrease in valuation allowance to the bottom rank (i.e., a ranking of one) (e.g., see Samuels 2021). Results (untabulated) are similar if we form the ranking variable using quintiles.

[10] We use OLS regression for ease of interpretation and to mitigate issues in interpretating interaction effects in nonlinear models (e.g., see Ai and Norton 2003). However, inferences are consistent with those reported in the paper if we instead use logistic regression (untabulated).

the sale of property, plant, and equipment and investments (*NEGGLCF*), the first year of losses (*FIRSTLOSS*), and large losses (*BIGLOSS*).

Finally, to mitigate the possibility that results are due to inherent differences in firms targeted by activist investors, we employ entropy balancing using the firm-level determinants of hedge fund activist interventions described above (*HFACONTROLS*).[11] Entropy balancing reweights observations such that treatment and control firms jointly achieve covariate balance across all variables for specific moments of the distribution (Hainmueller 2012; Hainmueller and Xu 2013).[12] Importantly, entropy balancing enables us to maximize the number of hedge fund activist events in our sample while minimizing the potential bias of certain design choices, such as those common in propensity score matching (see Shipman et al. 2017; DeFond et al. 2016).

4. Empirical Results

4.1 Sample Selection

Table 1 describes our sample selection procedure. As shown in Panel A, to examine the relation between the valuation allowance and hedge fund interventions (H1), we begin with the Compustat universe of firms with non-missing asset data for fiscal years ending between 1996 and 2014. We then exclude observations with missing data to compute equations (1) and (2), and observations for firms with known hedge fund activist events occurring outside our sample period. This results in a sample of 101,080 observations, representing 1,726 activist events.

Panel B reports the sample selection criteria for tests of the effect of hedge fund interventions on valuation allowance releases (H2). We begin with the Compustat universe of firms with non-missing asset data for fiscal years ending between 1995 and 2016. As discussed

[11] To enable the valuation allowance to vary systematically in the post-intervention period, we do not include this variable in the entropy balancing equation. As discussed above, we instead require treatment and control firms to be in the same valuation allowance (and MVE) quintile in the year before the intervention event.
[12] We use the first three moments of the distribution when entropy balancing.

above, we require all treated and matched control firms to have all necessary data for the period spanning one year pre-intervention to two years post-intervention. Thus, this sample period intentionally differs from the sample period reported in Panel A. We exclude observations with missing data to compute equations (1) and (2), and observations for firms with known hedge fund activist events occurring outside of our sample period. To ensure a balanced sample, we also exclude observations for firms that lack four sequential years of data.[13] Finally, we eliminate observations that do not have an industry-year market value of equity and valuation allowance quintile match. This results in a sample of 28,204 observations, representing 1,036 interventions.

4.2 Descriptive Statistics

Table 2, Panel A presents descriptive statistics for all variables used to estimate equation (1) for our tests of H1. Similar to prior research (e.g., Frank and Rego 2006), approximately 54 percent of our sample report positive valuation allowance balances, and the average (unlogged) valuation allowance balance is $45.0 million (untabulated). In addition, 20.4 percent of our sample reports valuation allowance releases (untabulated). In Panel B, we compare descriptive statistics for firms with hedge fund activist interventions (*INTERVENTION* = 1) to those without interventions (*INTERVENTION* = 0). We find significant differences for *LOGVA*, *POSVA*, and *VAINC* ($p < 0.01$), suggesting that firms targeted by hedge fund activists are more likely to have a positive valuation allowance, a valuation allowance increase, and higher valuation allowance balances. In addition, there are also several significant differences in control variables (e.g., *ROA*, *DIVIDEND*, and *INST*) between firms targeted by hedge fund activists and those without similar interventions. This supports using entropy balancing in our tests of H2 to ensure that firm characteristics are similar across both types of firms.

[13] Results (untabulated) are similar to those reported in the paper if we do not require a balanced sample for our tests of H2.

4.3 Valuation Allowances and the Likelihood of Hedge Fund Interventions (H1)

Table 3 presents results for estimating equation (1) for our valuation allowance variables of interest. The coefficients on $LOGVA_{t-1}$, $POSVA_{t-1}$, and $VAINC_{t-1}$ are positively associated with $INTERVENTION_t$ ($p < 0.01$). This suggests that firms are more likely to be targeted by hedge fund activists in the subsequent period when they have a valuation allowance on their books, their valuation allowance is larger, or they record an increase in the valuation allowance balance. In terms of economic significance, our results suggest that a positive valuation allowance increases the marginal probability of being targeted by a hedge fund activist by approximately 37 percent, holding all covariates constant (untabulated). Thus, the valuation allowance has an economically meaningful effect on the likelihood of hedge fund activism. Interestingly, this finding suggests that contrary to other capital market participants, activist hedge funds potentially view the valuation allowance as a signal of untapped value. Consistent with prior research (e.g., Brav et al. 2008; Cheng et al. 2015), we also find hedge fund activists are more likely to target under-valued firms (*Q*), more diversified firms (*HHI*), and firms with higher levels of institutional ownership (*INST*).[14]

4.4 The Effect of Hedge Fund Interventions on Valuation Allowance Releases (H2)

Panel A of Table 4 presents descriptive statistics for all variables used to estimate equation (2) and Panel B presents the covariate balance for our entropy-balanced sample. This sample includes 4,144 treatment observations and 24,060 control observations. Importantly, we find no significant differences between treatment and control observations after entropy balancing our sample, suggesting that we obtain excellent covariate balance across the firm-level determinants of hedge fund activist interventions. Panel C of Table 4 reports results of estimating

[14] In untabulated analyses, we find our valuation allowance inferences are unchanged when either managerial ability (Demerjian et al. 2012) or investment efficiency (Biddle et al. 2009) are included as controls.

equation (2) for our valuation allowance release variables using our entropy-balanced sample. As shown in Column 1, the coefficient on *TREAT * POST* is positive and significant for *RELEASEIND* using weighted OLS regression ($p < 0.05$).[15] Consistent with the results above, the coefficient on *TREAT * POST* in Column 2 is also positive and significant for *RELEASERANK* using weighted Tobit regression ($p < 0.05$). Collectively, this evidence suggests that target firms are more likely to release their valuation allowances following a hedge fund intervention, relative to matched control firms with similar pre-event valuation allowances.[16]

To provide additional insight regarding the timing of this effect, we re-estimate equation (2) after separating *POST* into yearly indicators, where year *t* represents the year of the intervention and year *t*-1 serves as the benchmark period. Table 5 presents the results. Consistent with our primary results, the coefficients on *TREAT * YEAR t+1* and *TREAT * YEAR t+2* are positive and significant for the *RELEASEIND* model ($p < 0.10$), and the coefficients on *TREAT * YEAR t*, *TREAT * YEAR t+1*, and *TREAT * YEAR t+2* are positive and significant for the *RELEASERANK* model ($p < 0.10$). This suggests that the positive effect of hedge fund interventions on releases of the valuation allowance persists over the [0, +2] window. In addition, the sum of the coefficients on *TREAT* and the interaction terms are positive and significant ($p < 0.01$) in both specifications (untabulated), suggesting that our results are likely not simply capturing a mean-reversion effect.

[15] We obtain similar results if we re-estimate equation (2) using a weighted logistic model (untabulated).
[16] We focus on valuation allowance releases to more directly test whether hedge fund activists appear to facilitate realization of firms' deferred tax assets. However, it is also possible that intervention firms may be *less likely* to record valuation allowances *increases* (in addition to being more likely to record valuation allowance releases). Consistent with this, we find that targeted firms are less likely to record valuation allowance increases in the post-intervention period, relative to matched control firms (untabulated).

5. Additional Analysis

5.1 Valuation Allowance Release Mechanism

Next, to provide additional insight into the mechanism behind valuation allowance releases, we examine whether target firms' valuation allowance releases are driven by firm performance or are a function of the subjectivity in accounting under ASC 740.

5.1.1 Actual and Expected Operating Performance

We first examine whether the increased likelihood of valuation allowance releases following activist interventions is the result of actual or expected increased firm performance. As previously discussed, prior research finds that hedge fund interventions are associated with increased target firm performance (e.g., Brav et al. 2008; Brav et al. 2015; Clifford 2008). Thus, target firms may be more likely to release their valuation allowances post-intervention because hedge fund activists increase firm performance. We explore this possibility by examining both actual and expected firm performance. To measure actual performance, we follow Chen et al. (2019) in computing several measures of pre-tax operating performance (*PRE_TAX_PERFORMANCE)*, including pre-tax ROA (*PRE_TAX_ROA*), pre-tax margin (*PRE_TAX_MARGIN*), and asset turnover (*ASSET_TO*). We then estimate the following weighted OLS regression:

$$\begin{aligned} PRE\_TAX\_PERFORMANCE_{i,t} = {} & \alpha_0 + \alpha_1 TREAT_{i,t} + \alpha_2 POST_{i,t} + \alpha_3 TREAT * POST_{i,t} \\ & + \alpha_4 RELEASEIND_{i,t} + \alpha_5 TREAT * RELEASEIND_{i,t} + \alpha_6 POST * RELEASEIND_{i,t} \\ & + \alpha_7 TREAT * POST * RELEASEIND_{i,t} + \alpha_k CONTROLS_{i,t} \\ & + Industry\ FE + Year\ FE + \varepsilon_{i,t.} \end{aligned} \quad (3a)$$

where the coefficient on *TREAT * POST * RELEASEIND* captures the effect of targeted firms' valuation allowance releases on post-intervention operating performance.

We measure expected performance (*FORECAST*) using the last analyst consensus forecast for period *t+1* available before the end of period *t*, as obtained from the I/B/E/S summary file (Call et al. 2021). We then estimate the following weighted OLS regression:

$$FORECAST_{i,t+1} = \alpha_0 + \alpha_1 TREAT_{i,t} + \alpha_2 POST_{i,t} + \alpha_3 TREAT * POST_{i,t} + \alpha_4 RELEASEIND_{i,t} + \alpha_5 TREAT * RELEASEIND_{i,t} + \alpha_6 POST * RELEASEIND_{i,t} + \alpha_7 TREAT * POST * RELEASEIND_{i,t} + \alpha_k CONTROLS_{i,t} + Industry\ FE + Year\ FE + \varepsilon_{i,t.} \quad (3b)$$

where the coefficient on *TREAT * POST * RELEASEIND* captures the differential expected performance for targeted firms with valuation allowance releases in the post-intervention period.

Table 6 reports the results. Across Columns (1) through (4), we find no evidence that pre-tax ROA, pre-tax margin, asset turnover, and analyst consensus forecasts are statistically different for targeted firms with post-intervention valuation allowance releases relative to other firms ($p > 0.10$). This evidence suggests that target firms' valuation allowance releases are likely not attributable to actual or expected improvements in operating performance.

5.1.2 Subjective and Objective Evidence of Future Taxable Income

We next investigate whether target firms' valuation allowance releases are attributable to the managerial discretion involved in the financial reporting for valuation allowances. Under ASC 740, managers must consider several pieces of evidence (positive and negative) when determining whether a valuation allowance is necessary. Importantly, the level of subjectivity varies by the type of evidence used. This evidence includes: (1) future taxable income, exclusive of reversing temporary differences and carryforwards (most subjective), (2) tax planning strategies, (3) future reversals of deferred tax assets and liabilities, (4) taxable income in years eligible for carryback, and (5) a history of recent cumulative losses (least subjective). Thus, to the extent target firms' valuation allowance releases are a function of the discretion provided by ASC 740, subjective evidence may play a greater role in these releases, relative to objective

evidence. To test this, we construct proxies for the five pieces of evidence above: *FUTURE_TI*, *TAXPLAN*, *REVERSE*, *CBACK*, and *NOCUMLOSS*, respectively (Goldman et al. 2022). We then estimate the following weighted OLS regression:

$$\begin{aligned} RELEASEIND_{i,t} = {} & \alpha_0 + \alpha_1 TREAT_{i,t} + \alpha_2 POST_{i,t} + \alpha_3 TREAT * EVIDENCE_{i,t} \\ & + \alpha_4 EVIDENCE_{i,t} + \alpha_5 TREAT * EVIDENCE_{i,t} + \alpha_6 POST * EVIDENCE_{i,t} \\ & + \alpha_7 TREAT * POST * EVIDENCE_{i,t} + \alpha_k CONTROLS_{i,t} \\ & + Industry\ FE + Year\ FE + \varepsilon_{i,t.} \end{aligned} \quad (4)$$

where *EVIDENCE* represents the evidence proxies listed above and the coefficient on *TREAT * POST * EVIDENCE* represents the effect of each evidence proxy on targeted firms' valuation allowance release decisions. Because firms cannot release valuation allowances they have not previously recorded, we restrict this test to firms that report a positive valuation allowance balance at some point during the intervention event window.

Table 7 reports the results. We find that of the five evidence measures, only tax planning appears to play a role in release decisions for targeted firms in the post-intervention period. Specifically, in Columns (2) and (6), the coefficient on *TREAT * POST * TAXPLAN* is positive and significant ($p < 0.05$). In contrast, the coefficients on the triple interactions for *FUTURE_TI* , *REVERSE*, *CBACK*, and *NOCUMLOSS* are insignificant ($p > 0.10$) when estimated individually (Columns 1, 3, and 4) or collectively (Column 6). This implies that tax planning opportunities—one of the most subjective sources of evidence under ASC 740—play a greater role in targeted firms' valuation allowance release decisions, relative to other types of evidence.[17] Overall, this evidence is consistent with intervention firms basing their valuation allowance releases at least

[17] While we find no evidence that future taxable income, the most subjective piece of evidence, affects the likelihood that a treatment firm releases their valuation allowance, this result is consistent with our findings that treatment firm valuation allowance releases appear to have little effect on future firm performance. Thus, although tax planning opportunities is the second-most subjective piece of evidence under ASC 740, this measure is likely more appropriate for our tests as it isolates subjective evidence from performance-induced subjective evidence.

partly on the discretion provided by ASC 740, rather than on real changes in operating performance.

5.2 Parallel Trends Assumption

A key assumption of difference-in-differences estimation is that treatment and control groups follow similar trends in the pre-event period (i.e., the parallel trends assumption) (Roberts and Whited 2013). We test the validity of this assumption by conducting falsification tests in which we re-estimate equations (1) and (2) using placebo intervention dates. Specifically, we create pseudo-intervention dates by assuming the hedge fund interventions occur four years prior to the actual date for both intervention firms and the matched control firms (Jiang et al. 2019).[18]

Panels A and B of Table 8 report the results. As shown in Panel A, the coefficients on *TREAT * POST* are insignificant for *RELEASEIND* and *RELEASERANK* (p = 0.229 and p = 0.391, respectively). Similarly, in Panel B, the coefficients on *TREAT * YEAR t*, *TREAT * YEAR t+1*, and *TREAT * YEAR t+2* are also insignificant for *RELEASEIND* (p = 0.676, p = 0.126, p = 0.101, respectively) and *RELEASERANK* (p = 0.734, p = 0.187, p = 0.292, respectively). This evidence is consistent with the validity of the parallel trends assumption in our tests and suggests that a time-series trend in valuation allowances is unlikely to explain our findings.

6. Conclusion

This study investigates whether hedge fund activists use and affect complex financial statement disclosures. Specifically, we examine whether hedge fund activists target firms with valuation allowances and affect the subsequent reporting of target firms' tax benefits. We find that hedge fund activists are more likely to target firms that have a valuation allowance, maintain larger valuation allowances, and record increases in valuation allowances. We also find that

[18] Four years ensures there is no overlap between the pseudo-event window and the actual event window.

target firms are more likely to release their valuation allowance following the intervention, relative to matched control firms, and that this effect persists for up to three years after the initial intervention event. Importantly, these findings are robust to controlling for the target firm's tax avoidance behavior, suggesting that the valuation allowance conveys incremental information to hedge fund activists beyond that captured by prior research (e.g., Cheng et al. 2012). Finally, we find evidence that valuation allowance releases are not simply a byproduct of performance improvements but rather the result of activist investors having greater confidence in the ability of tax planning opportunities to generate future taxable income. Importantly, these types of tax planning opportunities are distinct from those studied in prior research (e.g., Cheng et al. 2012) in that they result in higher, rather than lower, taxable income.

Collectively, our results are consistent with hedge fund activists strategically intervening in firms with valuation allowances and subsequently facilitating the release of the valuation allowance. Importantly, our results imply that information in the valuation allowance may alter a firm's investor base by attracting hedge fund activists. Given that the COVID-19 pandemic has increased the likelihood that firms must increase or establish a valuation allowance against their DTAs (e.g., KPMG 2020; Northcut 2020), these findings should be of particular interest to managers, investors, regulators, and academics alike.

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Appendix A
Variable Definitions

Variable	*Definition*
AF	Total number of analysts following the firm as of the last consensus forecast available in a given year. (I/B/E/S)
AGE	The natural log of one plus the number of years for which the firm's total assets (AT) are reported on Compustat. (CS)
ASSET_TO	Sales (SALE), scaled by average total assets (AT). (CS)
BIGLOSS	An indicator variable equal to one if *ROA* < -0.8, and zero otherwise. (CS)
CASHFLOW	Operating cash flow before extraordinary items (OANCF – XIDOC), scaled by beginning of year assets (AT). (CS)
CBACK	An indicator variable equal to one if average estimated taxable income, scaled by lagged total assets (AT), over the years t-2 to t is greater than zero, and zero otherwise. Estimated taxable income is measured as the sum of current federal tax expense (TXFED) and current foreign tax expense (TXFO) divided by the statutory federal tax rate minus the change in tax loss carryforwards (TLCF). (CS)
CETR	Cash taxes paid (TXPD) scaled by market value of assets (AT + PRCC_F*CSHO – SEQ). (CS)
CONTROLS	The vector of control variables used to estimate the effect of activist interventions on valuation allowance releases (H2), including *ROA*, *CASHFLOW*, Δ*ROA*, *NEGSPIW*, *NEGNOP*, *NEGGLIS*, *NEGGLCF*, *SGROWTH*, *AGE*, *R&D*, *FIRSTLOSS*, *LOSSESQ*, *BIGLOSS*, *MVE*, *DIVDUM*, *DIVSTOP*, and *CETR*.
DIVDUM	An indicator variable equal to one if the total dividends (DVC) are positive, and zero otherwise. (CS)
DIVIDEND	Dividend per share (DVC / CSHO). (CS)
DIVSTOP	An indicator variable equal to one if prior period dividends are positive (i.e., DVC > 0) but current period dividends are zero, and zero otherwise. (CS)
EVIDENCE	Evidence of future taxable income, including *FUTURE_TI*, *TAXPLAN*, *REVERSE*, *CBACK*, and *NOCUMLOSS*.
FIRSTLOSS	An indicator variable equal to one if current period *ROA* is less than zero and prior period *ROA* is greater than zero, and zero otherwise. (CS)
FORECAST	The last consensus analyst earnings forecast for period *t+1* available before the end of period *t*, as obtained from the I/B/E/S summary file. (I/B/E/S)
FUTURE_TI	The predicted value from a regression of future estimated taxable income (exclusive of reversing temporary differences and tax loss carryforwards) on current

	estimated taxable income (exclusive of reversing temporary differences and tax loss carryforwards), as estimated by Fama-French 48 industry-year, requiring at least 10 observations per industry-year. Estimated taxable income (exclusive of reversing temporary differences and tax loss carryforwards) is measured as the sum of current federal tax expense (TXFED) plus current foreign tax expense (TXFO) divided by the statutory federal tax rate, scaled by lagged total assets (AT). The resulting value is standardized, such that the mean is equal to zero and the standard deviation is equal to 0.50. (CS)
HFACONTROLS	The vector of firm-level control variables used to estimate the effect of valuation allowances on hedge fund activist interventions (H1), including *CETR*, *MVE*, *Q*, *SGROWTH*, *ROA*, *LEV*, *DIVIDEND*, *R&D*, *HHI*, *AF*, and *INST*.
HHI	The Herfindahl-Hirschman index of sales in different business segments. (CSS)
INST	Proportion of the firm's shares owned by institutions. (TR)
INTERVENTION	An indicator variable equal to one if a firm is targeted by a hedge fund activist in that firm year, and zero otherwise. For this purpose, the event date is the earliest of the 13D filing, the date the 5% threshold was crossed, or the first intervention event. (B)
LEV	Leverage, measured as the ratio of total debt (DLC + DLTT) to total debt and equity (DLC + DLTT + CEQ). (CS)
LOGVA	Natural log of one plus the valuation allowance. (CIQ)
LOSSESQ	Total number of consecutive losses over the prior ten quarters. (CS)
MVE	The natural logarithm of market value of equity, computed as PRCC_F*CSHO. (CS)
NEGGLCF	Losses on the sale of property plant and equipment and investments, measured as gains and losses on the sale of property, plant, and equipment (SPPIV), scaled by beginning of year assets. *NEGGLCF* is equal to zero if gains and losses are positive (i.e., SPPIV > 0). (CS)
NEGGLIS	Income statement losses for unusual and nonrecurring items, measured as unusual and/or non-recurring gains and losses (GLP) scaled by beginning of year assets. *NEGGLIS* is equal to zero if non-recurring gains and losses are positive (i.e., (GLP) > 0). (CS)
NEGNOP	Negative non-operating losses, measured as non-operating income and losses (NOPI) scaled by beginning of year assets. *NEGNOP* is equal to zero if non-operating income and losses are positive (i.e., NOPI > 0). (CS)

NEGSPIW	Negative special items, measured as special items (SPI) scaled by beginning of year assets (AT). *NEGSPIW* is equal to zero if special items are positive (i.e., SPI > 0). (CS)
NOCUMLOSS	An indicator variable equal to one if the sum of pretax comprehensive income (CI) plus pretax income (PI) multiplied by the statutory tax rate, for the years t-2 to year t, is non-negative, and zero otherwise. Missing values of CI are set equal to net income (NI) minus preferred dividends (UDVP) plus the change in marketable securities adjustment (MSA) plus the change in cumulative translation adjustment (RECTA). (CS)
PRE_TAX_MARGIN	Pre-tax income (PI), scaled by sales (SALE). (CS)
PRE_TAX_ROA	Pre-tax income (PI), scaled by average total assets (AT). (CS)
PRE_TAX_PERFORMANCE	Pre-tax performance measures, including *PRE_TAX_ROA*, *PRE_TAX_MARGIN*, and *ASSET_TO*.
POST	An indicator variable equal to one for firm-years ending after the intervention event, and zero otherwise. The year of the intervention (i.e., year *t*) is included in the post-period. (B)
POSVA	An indicator variable equal to one if the valuation allowance is positive, and zero otherwise. (CIQ)
Q	Tobin's Q, measured as the sum of debt and market value of equity (DLC + DLTT + MVE), scaled by the book value of debt and equity (DLC + DLTT + CEQ). (CS)
SGROWTH	Sales growth, measured as current period sales less prior period sales, scaled by prior period sales. Where prior period sales equal zero, *SGROWTH* is set to zero. (CS)
R&D	Research and development expenditures (XRD), scaled by beginning of year assets (AT). (CS)
RELEASE	Valuation allowance measures used to estimate H2, including *RELEASEIND* and *RELEASERANK*. (CIQ)
RELEASEIND	An indicator equal to one if the change in the valuation allowance from the prior period is less than 0, and zero otherwise. (CIQ)
RELEASERANK	A rank variable ranging in value from 1 to 4, where 4 represents observations with the largest decrease in the valuation allowance for a given year and 1 represents observations with no valuation allowance decrease. Rankings 2 through 4 are computed by year using yearly terciles for observations that report a valuation allowance decrease. Observations with no valuation allowance decrease are then assigned to the bottom rank (i.e., Rank 1). (CIQ)

REVERSE	An indicator variable equal to one if the ratio of gross deferred tax liabilities to gross deferred tax assets is greater than one, and zero otherwise. (AA, CB, HC, GHPP)
ROA	Return on assets, measured as income before extraordinary items (IB) scaled by beginning of year assets (AT). Changes in *ROA* are computed as current period *ROA* less prior period *ROA*. (CS)
$\lvert\Delta ROA\rvert$	The absolute value of $ROA_t - ROA_{t-1}$. (CS)
TAXPLAN	Industry-adjusted ratio of market value of equity (PRCC_F*CSHO) to tax basis of net assets. Tax basis of net assets is measured as stockholders' equity (SEQ) less taxable temporary differences (gross deferred tax liability divided by the statutory federal tax rate) plus deductible temporary differences (gross deferred tax asset divided by the statutory federal tax rate). The ratio is industry-adjusted by subtracting the industry-year median based on Fama-French 48 industries. The resulting value is standardized, such that the mean is equal to zero and the standard deviation is equal to 0.50. (AA, CB, CS, HC, GHPP)
TREAT	An indicator variable equal to one for firms undergoing activist interventions during the sample period, and zero otherwise. (B)
VA	Valuation allowance measures used to estimate H1, including *POSVA*, *LOGVA*, and *VAINC*. (CIQ)
VAINC	An indicator variable equal to one for firms reporting higher levels of valuation allowances in the current period, relative to the prior period, and zero otherwise. (CIQ)

Data Sources:

AA:	Audit Analytics
B:	Activist Intervention Data from Brav et al. (2008)
CB:	CalcBench Deferred Tax Asset and Liability data
CIQ:	Capital IQ
CS:	COMPUSTAT Fundamentals Annual or Quarterly Files
CSS:	COMPUSTAT Segments
GHPP:	Deferred Tax Asset and Liability data from Green et al. (2022)
HC:	Deferred Tax Asset and Liability data hand-collected from 10-K filings
I/B/E/S:	I/B/E/S from Thomson Reuters
TR:	Thomson Reuters 13-F Database

Table 1
Descriptive Statistics

Panel A: Sample Selection for H1	
Sample Restrictions	*N*
Compustat observations with non-missing asset data for the fiscal years ending January 1, 1996 to December 31, 2014	188,439
Less:	
Observations with missing data to construct the variables used in tests of H1 and H2	(85,649)
Observations for firms targeted by hedge fund activists outside of the sample period	(1,710)
H1 Sample	101,080

Panel B: Sample Selection for H2	
Sample Restrictions	*N*
Compustat observations with non-missing asset data for the fiscal years ending January 1, 1995 to December 31, 2016	216,616
Less:	
Observations with missing data to construct the variables used in tests of H1 and H2	(98,465)
Observations for firms targeted by hedge fund activists outside of the sample period	(2,081)
Observations for firms lacking four sequential years of data	(41,012)
Observations for firms with no industry-year match on MVE and VA quintile	(46,854)
H2 Sample	28,204

Table 2
Descriptive Statistics

Panel A: Descriptive Statistics for H1 Sample

Variable	N	Mean	SD	P25	P50	P75
$LOGVA_{t-1}$	101,080	1.417	1.846	0.000	0.306	2.589
$POSVA_{t-1}$	101,080	0.535	0.499	0.000	1.000	1.000
$VAINC_{t-1}$	101,080	0.323	0.468	0.000	0.000	1.000
$INTERVENTION_{t-1}$	101,080	0.017	0.130	0.000	0.000	0.000
$CETR_{t-1}$	101,080	0.009	0.014	0.000	0.004	0.015
MVE_{t-1}	101,080	5.373	2.419	3.672	5.391	7.054
Q_{t-1}	101,080	2.264	3.555	1.034	1.471	2.464
$SGROWTH_{t-1}$	101,080	0.183	0.574	-0.026	0.075	0.237
ROA_{t-1}	101,080	-0.099	0.683	-0.028	0.027	0.079
LEV_{t-1}	101,080	0.330	0.412	0.028	0.286	0.534
$DIVIDEND_{t-1}$	101,080	0.282	0.566	0.000	0.000	0.309
$R\&D_{t-1}$	101,080	0.042	0.106	0.000	0.000	0.029
HHI_{t-1}	101,080	0.859	0.230	0.720	1.000	1.000
AF_{t-1}	101,080	4.145	5.951	0.000	1.000	6.000
$INST_{t-1}$	101,080	0.314	0.335	0.000	0.188	0.611

Panel B: H1 Sample Split on Hedge Fund Activist Interventions *(INTERVENTION)*

	$INTERVENTION_t = 0$			$INTERVENTION_t = 1$			Diff. in Means	
Variable	N	Mean	SD	N	Mean	SD	Diff	T-Stat
$LOGVA_{t-1}$	99,354	1.408	1.842	1,726	1.959	1.986	-0.551	-12.308***
$POSVA_{t-1}$	99,354	0.532	0.499	1,726	0.670	0.470	-0.138	-11.358***
$VAINC_{t-1}$	99,354	0.321	0.467	1,726	0.402	0.490	-0.081	-7.106***
$CETR_{t-1}$	99354	0.009	0.014	1726	0.010	0.015	-0.001	-0.809
MVE_{t-1}	99,354	5.374	2.427	1,726	5.327	1.915	0.047	0.787
Q_{t-1}	99,354	2.272	3.573	1,726	1.789	2.282	0.483	5.593***
$SGROWTH_{t-1}$	99,354	0.184	0.576	1,726	0.123	0.455	0.061	4.37***
ROA_{t-1}	99,354	-0.101	0.687	1,726	-0.021	0.278	-0.080	-4.831***
LEV_{t-1}	99,354	0.330	0.412	1,726	0.336	0.394	-0.006	-0.600
$DIVIDEND_{t-1}$	99,354	0.284	0.568	1,726	0.162	0.415	0.122	8.905***
$R\&D_{t-1}$	99,354	0.042	0.106	1,726	0.042	0.095	0.000	0.146
HHI_{t-1}	99,354	0.860	0.230	1,726	0.831	0.241	0.029	5.128***
AF_{t-1}	99,354	4.142	5.959	1,726	4.337	5.476	-0.195	-1.350
$INST_{t-1}$	99,354	0.312	0.334	1,726	0.465	0.330	-0.153	-18.961***

This table reports summary statistics for the variables used in the main analyses. Panel A presents descriptive statistics for variables used to test H1. Panel B reports descriptive statistics for variables used to test H1, split on whether a hedge fund intervention occurred in that firm-year (i.e., *INTERVENTION = 1*). ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

Table 3
Valuation Allowances and the Likelihood of Hedge Fund Activist Interventions

	(1)	(2)	(3)
Variable	$INTERVENTION_t$	$INTERVENTION_t$	$INTERVENTION_t$
$LOGVA_{t-1}$	0.053***		
	(9.083)		
$POSVA_{t-1}$		0.134***	
		(6.024)	
$VAINC_{t-1}$			0.101***
			(4.621)
$CETR_{t-1}$	1.307	0.791	0.481
	(1.629)	(0.977)	(0.597)
MVE_{t-1}	-0.069***	-0.056***	-0.057***
	(-10.477)	(-8.699)	(-8.766)
Q_{t-1}	-0.025***	-0.028***	-0.028***
	(-5.183)	(-5.720)	(-5.823)
$SGROWTH_{t-1}$	-0.049**	-0.058**	-0.059**
	(-2.053)	(-2.361)	(-2.390)
ROA_{t-1}	0.169***	0.162***	0.171***
	(5.977)	(6.166)	(6.203)
LEV_{t-1}	0.050*	0.082***	0.086***
	(1.900)	(3.077)	(3.226)
$DIVIDEND_{t-1}$	-0.132***	-0.139***	-0.147***
	(-4.293)	(-4.463)	(-4.682)
$R\&D_{t-1}$	0.266**	0.332***	0.357***
	(2.192)	(2.819)	(3.031)
HHI_{t-1}	-0.159***	-0.161***	-0.171***
	(-3.773)	(-3.798)	(-4.042)
AF_{t-1}	-0.008***	-0.007***	-0.007***
	(-3.375)	(-3.108)	(-2.998)
$INST_{t-1}$	0.692***	0.662***	0.675***
	(18.107)	(17.216)	(17.644)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	101,080	101,080	101,080
Pseudo R^2	0.0626	0.0604	0.0597

This table presents results of Probit regressions of *INTERVENTION* at year *t* on lagged values of our valuation allowance variables of interest and control variables. Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.

Table 4
The Effect of Hedge Fund Activist Interventions on Valuation Allowance Releases

Panel A: Descriptive Statistics for H2 Sample

Variable	N	Mean	SD	P25	P50	P75
RELEASEIND	28,204	0.167	0.373	0.000	0.000	0.000
RELEASERANK	28,204	1.333	0.815	1.000	1.000	1.000
CETR	28,204	0.009	0.014	0.000	0.004	0.014
ROA	28,204	-0.038	0.358	-0.013	0.020	0.069
CASHFLOW	28,204	0.042	0.213	0.010	0.060	0.127
$\|\Delta ROA\|$	28,204	0.119	0.358	0.007	0.027	0.086
NEGSPIW	28,204	-0.016	0.049	-0.006	0.000	0.000
NEGNOP	28,204	-0.003	0.011	-0.001	0.000	0.000
NEGGLIS	28,204	0.000	0.000	0.000	0.000	0.000
NEGGLCF	28,204	-0.003	0.013	-0.001	0.000	0.000
SGROWTH	28,204	0.100	0.338	-0.044	0.057	0.189
AGE	28,204	2.612	0.689	2.079	2.565	3.091
R&D	28,204	0.034	0.082	0.000	0.000	0.021
FIRSTLOSS	28,204	0.103	0.304	0.000	0.000	0.000
LOSSESQ	28,204	1.277	2.687	0.000	0.000	1.000
BIGLOSS	28,204	0.026	0.158	0.000	0.000	0.000
MVE	28,204	5.285	2.277	3.718	5.232	6.852
DIVDUM	28,204	0.425	0.494	0.000	0.000	1.000
DIVSTOP	28,204	0.022	0.145	0.000	0.000	0.000

Table 4, Continued

Panel B: Covariate Balance

	TREAT = 0			*TREAT* = 1			Diff. in Means	
Variable	N	Mean	SD	N	Mean	SD	Diff	T-Stat
CETR	24,060	0.010	0.014	4,144	0.010	0.014	0.000	0.000
MVE	24,060	5.429	1.957	4,144	5.429	1.957	0.000	0.001
Q	24,060	1.859	2.022	4,144	1.859	2.022	0.000	0.000
SGROWTH	24,060	0.079	0.346	4,144	0.079	0.346	0.000	0.000
ROA	24,060	-0.013	0.222	4,144	-0.013	0.222	0.000	0.006
LEV	24,060	0.332	0.337	4,144	0.332	0.337	0.000	0.000
DIVIDEND	24,060	0.189	0.436	4,144	0.189	0.436	0.000	0.001
R&D	24,060	0.036	0.077	4,144	0.036	0.077	0.000	0.001
HHI	24,060	0.822	0.244	4,144	0.822	0.244	0.000	0.000
AF	24,060	4.409	5.534	4,144	4.410	5.534	0.000	0.001
INST	24,060	0.478	0.331	4,144	0.478	0.331	0.000	0.001

Table 4, Continued

Panel C: Regression Results for H2		
	(1)	(2)
Variables	*RELEASEIND*	*RELEASERANK*
TREAT	0.018	0.047
	(1.236)	(1.410)
POST	-0.021**	-0.050**
	(-2.420)	(-2.511)
*TREAT * POST*	0.031**	0.084**
	(2.032)	(2.410)
CETR	-2.675***	-7.531***
	(-8.633)	(-11.149)
ROA	0.416***	1.084***
	(11.115)	(11.142)
CASHFLOW	-0.056	-0.242***
	(-1.560)	(-2.874)
$\|\Delta ROA\|$	0.183***	0.564***
	(7.040)	(7.892)
NEGSPIW	-0.035	-0.380**
	(-0.473)	(-2.056)
NEGNOP	0.154	0.205
	(0.384)	(0.222)
NEGGLIS	-14.611	-28.171
	(-0.551)	(-0.454)
NEGGLCF	-0.525*	-2.249***
	(-1.710)	(-2.905)
SGROWTH	-0.012	-0.066**
	(-0.962)	(-2.227)
AGE	0.035***	0.087***
	(4.566)	(5.052)
R&D	0.320***	0.636***
	(4.398)	(3.825)
FIRSTLOSS	-0.074***	-0.167***
	(-6.848)	(-6.934)
LOSSESQ	-0.017***	-0.026***
	(-9.777)	(-6.186)
BIGLOSS	0.358***	0.850***
	(6.574)	(6.378)
MVE	0.010***	0.064***
	(3.661)	(10.406)
DIVDUM	-0.074***	-0.185***
	(-6.683)	(-7.514)
DIVSTOP	-0.065***	-0.108*
	(-2.595)	(-1.863)
Industry FE	Yes	Yes

Year FE	Yes	Yes
Observations	28,204	28,204
R^2/Pseudo R^2	0.110	0.051

This table reports descriptive statistics (Panel A) and the covariate balance for our entropy-balanced sample (Panel B). Panel C presents results of weighted OLS (Column 1) and weighted Tobit regressions (Column 2) of our valuation allowance release measures of interest on indicator variables for treatment and post-intervention periods, an interaction of the treatment and post variables, and control variables. Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.

Table 5
Dynamic Regressions of Hedge Fund Activist Interventions on Valuation Allowance Releases

	(1)	(2)
Variables	*RELEASEIND*	*RELEASERANK*
TREAT	0.018	0.048
	(1.255)	(1.430)
YEAR t	-0.031***	-0.076***
	(-3.471)	(-3.655)
YEAR t+1	-0.025**	-0.062***
	(-2.463)	(-2.671)
YEAR t+2	-0.003	-0.004
	(-0.269)	(-0.171)
*TREAT * YEAR t*	0.026	0.080**
	(1.494)	(2.028)
*TREAT * YEAR t+1*	0.032*	0.080*
	(1.715)	(1.854)
*TREAT * YEAR t+2*	0.036*	0.096**
	(1.839)	(2.129)
CETR	-2.661***	-7.496***
	(-8.589)	(-11.089)
ROA	0.416***	1.084***
	(11.106)	(11.145)
CASHFLOW	-0.058	-0.249***
	(-1.620)	(-2.936)
$\lvert\Delta ROA\rvert$	0.184***	0.566***
	(7.068)	(7.924)
NEGSPIW	-0.033	-0.375**
	(-0.436)	(-2.025)
NEGNOP	0.140	0.159
	(0.347)	(0.171)
NEGGLIS	-16.125	-31.953
	(-0.605)	(-0.512)
NEGGLCF	-0.523*	-2.251***
	(-1.703)	(-2.901)
SGROWTH	-0.012	-0.066**
	(-0.980)	(-2.246)
AGE	0.034***	0.084***
	(4.378)	(4.842)
R&D	0.318***	0.630***
	(4.367)	(3.791)
FIRSTLOSS	-0.073***	-0.165***
	(-6.759)	(-6.846)
LOSSESQ	-0.017***	-0.026***
	(-9.856)	(-6.261)
BIGLOSS	0.357***	0.847***

	(6.566)	(6.361)
MVE	0.010***	0.065***
	(3.772)	(10.513)
DIVDUM	-0.073***	-0.184***
	(-6.644)	(-7.477)
DIVSTOP	-0.065***	-0.108*
	(-2.595)	(-1.854)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	28,204	28,204
R^2/Pseudo R^2	0.111	0.051

This table reports the results of dynamic weighted OLS (Column 1) and weighted Tobit regressions (Column 2) of our valuation release measures of interest on indicator variables for treatment and individual indicator variables for years in the post-period, an interaction of the treatment and year variables, and control variables. Year *t* represents the event year. Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.

Table 6
Hedge Fund Activist Interventions, Valuation Allowance Releases, and Actual and Expected Operating Performance

	(1)	(2)	(3)	(4)
Variables	*PRE_TAX_ROA*	*PRE_TAX_MARGIN*	*ASSET_TO*	*FORECAST*
TREAT	-0.001	-0.005	-0.024	-0.088
	(-0.948)	(-1.124)	(-0.628)	(-1.224)
POST	0.000	-0.001	-0.008	-0.001
	(0.620)	(-0.731)	(-0.600)	(-0.022)
*TREAT * POST*	0.002	0.005	0.012	0.061
	(1.318)	(1.328)	(0.604)	(1.043)
RELEASEIND	-0.006**	-0.017***	0.047	-0.071
	(-2.532)	(-3.494)	(1.167)	(-0.561)
*TREAT * RELEASEIND*	-0.002	-0.001	-0.021	-0.085
	(-0.312)	(-0.129)	(-0.271)	(-0.462)
*POST * RELEASEIND*	0.003	0.002	0.012	0.074
	(0.990)	(0.471)	(0.314)	(0.557)
*TREAT * POST * RELEASEIND*	0.001	0.003	-0.060	-0.123
	(0.118)	(0.275)	(-0.806)	(-0.632)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	14,856	14,851	14,856	9,882
R^2	0.921	0.587	0.524	0.375

This table reports the results of weighted OLS regressions for the actual and expected operating performance analyses, where *TREAT*, *POST*, and *TREAT * POST* interact with the valuation allowance release indicator (*RELEASEIND*). Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.

Table 7
Hedge Fund Activist Interventions, Valuation Allowance Releases, and Subjective and Objective Evidence of Future Taxable Income

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*RELEASEIND*	*RELEASEIND*	*RELEASEIND*	*RELEASEIND*	*RELEASEIND*	*RELEASEIND*
TREAT	-0.008	-0.028	-0.034	-0.029	-0.017	-0.036
	(-0.389)	(-0.877)	(-0.895)	(-0.768)	(-0.591)	(-0.474)
POST	-0.014	-0.028	-0.046*	-0.074***	-0.018	-0.106*
	(-0.940)	(-1.258)	(-1.681)	(-2.980)	(-0.982)	(-1.875)
*TREAT * POST*	0.034	0.088**	0.103**	0.059	0.032	0.119
	(1.459)	(2.536)	(2.522)	(1.457)	(1.040)	(1.477)
FUTURE_TI	-0.039					-0.027
	(-1.497)					(-0.547)
*TREAT * FUTURE_TI*	0.043					0.020
	(1.018)					(0.280)
*POST * FUTURE_TI*	0.029					0.005
	(1.047)					(0.100)
*TREAT * POST * FUTURE_TI*	-0.031					-0.001
	(-0.652)					(-0.010)
TAXPLAN		0.047				0.087
		(1.116)				(1.559)
*TREAT * TAXPLAN*		-0.141**				-0.253***
		(-2.053)				(-3.562)
*POST * TAXPLAN*		-0.056				-0.105
		(-1.125)				(-1.582)
*TREAT * POST * TAXPLAN*		0.154**				0.241***
		(2.078)				(2.822)
REVERSE			-0.053			-0.107**
			(-1.240)			(-2.226)
*TREAT * REVERSE*			0.039			0.058
			(0.559)			(0.718)
*POST * REVERSE*			0.065			0.082

			(1.445)			(1.576)
*TREAT * POST * REVERSE*			-0.082			-0.107
			(-1.025)			(-1.184)
CBACK				-0.044		-0.082
				(-1.527)		(-1.270)
*TREAT * CBACK*				0.037		0.083
				(0.785)		(0.853)
*POST * CBACK*				0.090***		0.106
				(3.009)		(1.542)
*TREAT * POST * CBACK*				-0.041		-0.112
				(-0.802)		(-1.056)
NOCUMLOSS					0.016	0.066
					(0.686)	(1.052)
*TREAT * NOCUMLOSS*					0.017	-0.095
					(0.438)	(-0.994)
*POST * NOCUMLOSS*					0.012	-0.027
					(0.516)	(-0.399)
*TREAT * POST * NOCUMLOSS*					0.017	0.089
					(0.380)	(0.846)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,233	5,521	5,516	10,381	14,523	4,173
R^2	0.113	0.112	0.112	0.113	0.117	0.127

This table reports the results of weighted OLS regressions for the valuation allowance release analyses, where *TREAT*, *POST*, and *TREAT * POST* interact with five measures capturing the evidence of future taxable income (*FUTURE_TI, TAXPLAN, REVERSE, CBACK*, and *NOCUMLOSS*). Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.

Table 8
Falsification Tests

Panel A: Regressions of Hedge Fund Activist Interventions on Valuation Allowance Releases

	(1)	(2)
Variables	*RELEASEIND*	*RELEASERANK*
TREAT	0.005	0.031
	(0.333)	(0.859)
POST	0.001	0.000
	(0.139)	(0.017)
*TREAT * POST*	0.021	0.034
	(1.204)	(0.858)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	18,644	19,132
R^2/Pseudo R^2	0.118	0.052

Panel B: Dynamic Regressions of Hedge Fund Activist Interventions on Valuation Allowance Releases

	(1)	(2)
Variables	*RELEASEIND*	*RELEASERANK*
TREAT	0.005	0.031
	(0.329)	(0.847)
YEAR t	0.020*	0.037
	(1.847)	(1.571)
YEAR t+1	-0.004	-0.015
	(-0.338)	(-0.579)
YEAR t+2	-0.009	-0.020
	(-0.797)	(-0.797)
*TREAT * YEAR t*	-0.008	-0.016
	(-0.417)	(-0.340)
*TREAT * YEAR t+1*	0.032	0.061
	(1.532)	(1.320)
*TREAT * YEAR t+2*	0.035	0.049
	(1.638)	(1.053)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	18,644	19,132
R^2/Pseudo R^2	0.119	0.052

This table reports the results of falsification tests using pseudo-event dates set using pseudo-intervention dates set four years before the respective date (Jiang et al. 2019). Panel A reports results of estimating equation (2) while Panel B reports results of the dynamic trends analysis. Standard errors are clustered by firm. t-statistics are shown in parentheses. ***, ** and * indicate statistical

significance at $p < 0.01$, $p < 0.05$ and $p < 0.10$, respectively, using two-tailed tests. All variables are defined in Appendix A.