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journal homepage: [www.journals.elsevier.com/journal-of-accounting-and-economics](http://www.journals.elsevier.com/journal-of-accounting-and-economics)Do tax-based proprietary costs discourage public listing?<sup>☆</sup>Benjamin P. Yost<sup>\*</sup>

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## ABSTRACT

This study investigates whether tax-based proprietary costs associated with being a public firm (i.e., costs resulting from increased visibility to the tax authority) discourage public listing. I exploit the introduction of a mandatory disclosure requirement (FIN 48) which generated a signal to the government regarding the uncertainty of public firms' tax positions, allowing for more carefully targeted audits. I hypothesize and find evidence of an increased propensity to go private by public, tax aggressive firms following the enactment of the disclosure rule but prior to its adoption. Cross-sectionally, the effect is stronger among firms that are more sensitive to tax-based proprietary costs. Moreover, IPOs by tax aggressive firms exhibit a relative decline after FIN 48, consistent with the disclosure requirement deterring private, tax aggressive firms from going public. Overall, my findings suggest that mandatory disclosure rules imposing tax-based proprietary costs may discourage some firms from operating as public entities.

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## 1. Introduction

In this study, I investigate whether tax-based proprietary costs associated with being a public firm discourage public listing.<sup>1</sup> My motivation is from two separate streams of literature. First, prior work suggests that public disclosures can give rise to tax-based proprietary costs insofar as the tax authority uses the information to determine where to allocate scarce

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<sup>1</sup> "Tax-based proprietary costs" refers to potential explicit costs borne by the firm as a result of disclosing information enabling the tax authority to more effectively enforce the tax law (Bozanic et al., 2017).

enforcement resources and/or to aid in negotiations with taxpayers (Mills, 1998; Robinson and Schmidt, 2013). Moreover, firms appear to understand the potential for their public disclosures to attract tax authorities' attention, and respond by strategically altering their financial reporting and disclosures to reduce their visibility (e.g., Blouin et al., 2010). Second, recent work finds that firms are willing to incur substantial costs in response to concerns over disclosing proprietary information. For instance, Bernard et al. (2018) find that European private firms sacrifice assets to manage their size downward and thereby fall below size-based disclosure thresholds, whereas Aghamolla and Thakor (2022) find evidence that proprietary costs of disclosure deter biopharmaceutical firms from going public. Taking these two streams of literature together, I hypothesize that tax-based proprietary costs arising from being a public firm discourage public listing.

In my primary setting, I test my prediction by investigating whether the enactment of a disclosure mandate requiring that public firms reveal the strength of their underlying tax positions incentivized going-private transactions. FASB Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes* (FASB 2006a), issued in July 2006, requires firms to disclose a liability for tax benefits claimed on their tax returns that are not likely to hold up if challenged by the tax authorities.<sup>2</sup> Although the regulations were intended to inform capital market participants, some observers warned that the required disclosures would also serve as a signal to the government about the taxpayer's level of uncertainty about its own tax positions. For instance, in a comment letter to the SEC, Allergan, Inc. argued that the new FIN 48 disclosures would "provide a readily visible red flag to all taxing authorities as to the magnitude of potential audit issues for which the taxing authorities should be looking."<sup>3</sup>

My study draws on analytical work by Mills et al. (2010), who examine how FIN 48 affected the strategic interaction between corporate taxpayers and the government. Their analysis recognizes that the government is resource-constrained and thus cannot perform audits of all firms, but rather must strategically select which firms to audit based on its belief about the strength of the taxpayer's filing position. The introduction of FIN 48 creates a public signal informing the government of the taxpayer's level of uncertainty about its own tax filing positions, enabling the government to form a more precise belief and revise its audit strategy accordingly. One implication is that public taxpayers with weak tax positions were made worse off by FIN 48 due to an increased likelihood of being audited (i.e., a tax-based proprietary cost). I conjecture that tax-based proprietary costs imposed by FIN 48 increased the marginal cost of operating as a public firm, particularly among aggressive tax planning firms. Accordingly, I predict that the enactment of FIN 48 led to an increased propensity to go private among public, tax aggressive firms.

To test my hypothesis, I employ a difference-in-differences (DID) methodology in which I exploit a window of time between FIN 48's enactment and adoption. The FASB issued the final version of FIN 48 on July 13, 2006, but firms were not required to start making the new disclosures until fiscal years beginning after December 15, 2006.<sup>4</sup> The delay in implementation presented firms with an opportunity to preemptively go private and thereby avoid revealing the weakness of their tax positions to the government. I examine the change in firms' propensity to announce a going-private transaction between FIN 48 enactment and adoption, and compare it to the surrounding quarters.<sup>5</sup> Furthermore, I identify treatment intensity using cross-sectional variation in firms' tax planning aggressiveness. Because FIN 48 disclosures reveal taxpayer uncertainty in their positions, more aggressive tax planners are more heavily affected by the regulation. I employ three main proxies for tax aggressiveness: the predicted probability that a firm is engaged in tax sheltering (Wilson, 2009); a common factor extracted from three measures of book-tax differences (Kim et al., 2011); and the scaled difference between cash taxes paid and the product of the firm's pre-tax book income and the statutory tax rate (Henry and Sansing, 2018).

In my main tests, I find that tax aggressive firms exhibit an increased propensity to announce a going-private transaction in the quarters between FIN 48 enactment and adoption, relative to non-tax aggressive firms. The effect is economically significant, with a one standard deviation increase in tax aggressiveness leading to a 29.3%–54.4% relative increase in going-private likelihood in the quarters between FIN 48 enactment and adoption. The estimates indicate that FIN 48 caused approximately 20–27 excess going-private transactions among tax aggressive firms during this window, using non-tax aggressive firms as a benchmark. The results are robust to the use of entropy balancing, which alleviates concern about comparability across tax aggressive and non-tax aggressive firms. Moreover, I find evidence of parallel trends in going-private propensity for tax aggressive and non-tax aggressive firms in the quarters before FIN 48 enactment and after FIN 48 adoption, providing greater confidence that the results can be interpreted causally.

Next I examine two sources of heterogeneity in FIN 48's impact on tax aggressive firms. First, I examine the effect of FIN 48 on firms with primarily domestic operations versus those with extensive foreign operations. The IRS is likely to have difficulty using FIN 48 disclosures for firms with substantial foreign operations because reserves for uncertain tax positions in multiple jurisdictions are combined in the FIN 48 disclosure. Consistent with this conjecture, I find the increased going-private

<sup>2</sup> FIN 48 requirements are codified in Accounting Standards Codification Topic 740-10.

<sup>3</sup> Anecdotal evidence suggests that Allergan's concern was widespread among corporate taxpayers. Blouin et al. (2007, 2010) report that in a survey conducted during a May 2007 webcast hosted by KPMG, 89% of approximately 4,000 participants responded that they expected FIN 48 disclosures to lead to increased tax audits.

<sup>4</sup> At first blush, the time between FIN 48 enactment and adoption may seem too short to execute a take-private transaction, but the window is longer than it first appears. Although FIN 48 was formally issued on July 13, 2006, the disclosure requirement was announced earlier, on May 10, 2006. In addition, the first FIN 48 disclosures were not required until the quarter ending March 31, 2007 (for firms with December year-ends). Hence, so long as a deal was completed by the end of the firm's first fiscal quarter of 2007, a firm could avoid revealing its uncertain tax positions.

<sup>5</sup> Fig. 1 illustrates how the research design incorporates the timing surrounding FIN 48 enactment and adoption.

propensity of tax aggressive firms following FIN 48 enactment is concentrated among domestic firms. Second, I examine the impact of belonging to the IRS's Coordinated Industry Case (CIC) program, under which firms are continuously audited. Consistent with FIN 48 imposing lower tax-based proprietary costs on CIC firms (who are audited every year regardless of their FIN 48 disclosures), I find the increased going-private propensity in response to FIN 48 is concentrated among non-CIC firms.

To better understand the different channels of going private, I classify going-private transactions into two categories: private equity firm buyouts, and buyouts by private third-party operating firms. For managers concerned about the impending FIN 48 disclosure requirements, private equity offers several advantages. First, private equity buyers can typically act faster than private operating buyers because of their streamlined evaluation process. Second, private equity deals are less likely to attract regulatory scrutiny over antitrust concerns, which can slow the deal process and increase the risk of non-consummation. Third, private equity buyers are more likely than third-party operating firms to retain incumbent management following the transaction. Consistent with these arguments, I find the increase in going-private transactions among tax aggressive firms between FIN 48 enactment and adoption is driven by private equity buyers.

I perform several additional analyses to further solidify the link between tax-based proprietary costs and going-private decisions. To start, I exploit variation in the timing of the first required FIN 48 disclosures. Since FIN 48 took effect for fiscal years beginning after December 15, 2006, December fiscal year-end (FYE) firms were the first to be impacted by the mandate, and therefore faced more time pressure than non-December FYE firms. This feature is relevant because conducting a thorough search for prospective buyers and negotiating an agreement can be time-consuming. I find that tax-aggressive firms with December FYEs exhibit an increased propensity to go private in 2006Q3-Q4, whereas tax aggressive firms with non-December FYEs do not exhibit an increased propensity to go private until later, in 2007Q1-Q2. The findings are consistent with tax aggressive firms responding to the timing of their first required FIN 48 disclosures and further mitigate endogeneity concerns by raising the bar for alternative explanations.

Next, I validate an implicit assumption underlying my study – that the FIN 48 disclosures attract increased IRS scrutiny of tax aggressive firms.<sup>6</sup> Using IRS downloads of firms' SEC filings (Bozanic et al., 2017), I find a dramatic increase in IRS downloads of tax aggressive firms' financial statements in 2007–2008, after observing no systematic differences in IRS scrutiny of tax aggressive and non-tax aggressive firms in 2004–2006. This finding is consistent with FIN 48 disclosures providing information useful to the tax authority in helping them select firms to audit.

I perform a battery of robustness tests in my primary setting. First, I test whether the findings are robust to the use of several alternative proxies for tax aggressiveness, including industry- and size-adjusted cash and GAAP effective tax rates. Second, I employ alternative benchmark periods around FIN 48. Third, to rule out concerns relating to non-accelerated filers anticipating compliance with Sarbanes-Oxley Section 404, I exclude firms with less than \$75 million in market capitalization (the upper limit to qualify for non-accelerated filer status). Fourth, I use firm and industry-year-quarter fixed effects to control for unobservable firm characteristics and time-varying industry shocks. In all cases I find that my main inferences are unchanged.

Next, I extend the investigation in two ways. First, I study whether FIN 48 led to a reduction in IPOs by private, tax aggressive firms. Empirically, this is a difficult question to answer because firms that remain private in response to FIN 48 are unobservable. To overcome this challenge, I examine the change in aggregate quarterly IPOs by tax aggressive firms before and after FIN 48 enactment, using the change in IPOs by non-tax aggressive firms as a benchmark. I employ IPO filings from 2004Q3-2008Q2 (eight quarters before and after FIN 48 enactment), using pre-IPO prospectus data to measure tax aggressiveness. I find that IPOs by tax aggressive firms decline by 19.9%–32.9% relative to IPOs by non-tax aggressive firms, corresponding to approximately 28–50 fewer IPOs in the eight quarters following FIN 48 enactment.

As a second extension, I examine whether the IRS's introduction of the *Uncertain Tax Position Statement* (Schedule UTP) mitigated the impact of FIN 48 for public firms (IRS, 2010). First announced in January 2010, Schedule UTP requires all firms, public and private, to report information to the IRS about their uncertain tax positions. Thus, Schedule UTP can be viewed as mitigating tax-based proprietary costs for public firms, because after its implementation the IRS obtains similar information regardless of whether the firm is public or private. Accordingly, I predict that Schedule UTP led to increased IPOs by private, tax aggressive firms. Extending my IPO sample to include the introduction of Schedule UTP and using IPOs by non-tax aggressive firms as a benchmark, I find evidence consistent with my conjecture. Overall, the evidence on IPOs implies that tax-based proprietary costs influence private firms' decisions to go public, which dovetails with my main findings that such costs influence public firms' decisions to go private.

This study's findings contribute to several streams of literature. First, they provide evidence that tax-based proprietary costs influence a firm's choice to operate as a public or private entity – one of a firm's primary financing decisions. Prior work examining tax-based proprietary costs focuses primarily on the question of whether taxpayers respond to perceived proprietary costs by altering their financial reporting (Blouin et al., 2010) and/or tax-related disclosures (Robinson and Schmidt, 2013; Bozanic et al., 2017; Deng et al., 2021). By providing evidence that tax-based proprietary costs affect the decision to operate as a public firm, my findings extend the academic literature and potentially inform policy debates regarding

<sup>6</sup> More specifically, my assumption is that firms perceived the new disclosures would attract increased IRS scrutiny. Although it is difficult to ascertain historical perceptions, Exhibit OA1 in the online appendix contains numerous anecdotes suggesting that practitioners, the IRS, and firms viewed FIN 48 as a potentially game-changing tax enforcement tool.

disclosure rules in the U.S. and elsewhere. For example, in September 2019, a group of U.S. senators urged the FASB to increase disclosure requirements pertaining to foreign subsidiary activities for the purpose of improved tax enforcement (Dyreg, 2021). My findings suggest such disclosure requirements may have the unintended consequence of discouraging firms from operating as public entities.

Second, my findings extend our understanding of the factors that influence firms' public listing decisions. Numerous academic and media articles have documented the "U.S. listing gap" – the phenomenon that in recent decades the number of U.S. listed firms has declined relative to other countries (e.g., Doidge et al., 2017).<sup>7</sup> Ljungqvist et al. (2018) note the negative societal implications of excessive delistings leading to a shrinking pool of investments available to average investors, highlighting the need to understand why the public firm model has fallen out of favor. Several (non-mutually exclusive) explanations have been proposed, including that U.S. public firms face an increasing regulatory burden from developments such as the Sarbanes–Oxley Act of 2002 (Engel et al., 2007; Leuz et al., 2008). My findings suggest that firms view tax-based proprietary costs as an additional burden of public listing.

Finally, my study informs our understanding of the effects of mandatory disclosure regulations and has implications extending beyond the tax area. It is vital to be cognizant of the various stakeholders who will observe corporate disclosures and to consider the possible consequences. Moreover, recent surveys by Leuz and Wysocki (2016) and Roychowdhury et al. (2019) highlight the need for more evidence regarding the role of firm disclosures and disclosure regulations in corporate finance decisions (i.e., "real effects"). My study addresses these calls by providing evidence that the FIN 48 disclosure mandate led to the unintended consequence of discouraging some firms from operating as public entities.

## 2. Background and hypothesis development

### 2.1. FIN 48

On July 13, 2006, the FASB issued FIN 48 in an effort to standardize the measurement, recognition, and disclosures surrounding firms' uncertain tax benefits. Prior to FIN 48, wide variation existed in how companies reported liabilities related to uncertain tax benefits. Although many firms applied SFAS No. 5, *Accounting for Contingencies* (FASB 1975), they often employed different thresholds to determine whether potential losses related to uncertain tax benefits were considered probable and estimable (Blouin et al., 2010). Furthermore, recorded liabilities related to uncertain tax positions were typically not visible to financial statement users, but rather aggregated with items such as environmental, legal, or deferred tax liabilities (Mills et al., 2010). FIN 48 established new rules governing measurement and recognition of uncertain tax benefits, as well as new disclosure requirements to improve transparency to financial statement users.

Under FIN 48, firms are required to evaluate each tax position using a two-step process. First, the company determines whether it is "more likely than not" that a tax position will be sustained upon examination based on the technical merits of the position. Second, if a tax position meets the "more likely than not" threshold, the firm will recognize a tax benefit equal to the largest amount that is greater than 50 percent likely to be realized upon settlement. The amount of uncertain tax benefit that fails to clear the above thresholds is recorded as a liability on the firm's financial statements. In addition to the new measurement and recognition rules, FIN 48 required enhanced disclosures specifically related to uncertain tax positions.<sup>8</sup>

Although FIN 48 was intended to assist investors by improving the accounting for tax uncertainty (FASB 2006a), observers worried the new disclosures would inform the government of the taxpayer's uncertainty about their own tax positions. Chester Spatt, Chief Economist and Director of the Office of Economic Analysis for the SEC, warned that FIN 48 could provide "a roadmap for the tax authority that undercuts the firm's bargaining power in the associated tax disputes" (Spatt, 2007). Lehman Brothers tax analyst Robert Willens noted that "FIN 48 may prove to be one of the most significant enforcement tools that the IRS has been presented with in recent years" and that "this is one of the best things that has happened to the IRS in a long time."<sup>9</sup>

Prior research examining the effects of FIN 48 has focused primarily on whether firms responded by changing their financial disclosures or their tax planning behavior to accommodate the heightened visibility to the government. Blouin et al. (2010) find that some large firms responded to FIN 48 enactment by preemptively settling outstanding tax disputes and decreasing tax reserves (liabilities related to uncertain tax positions) prior to implementing the new disclosures to reduce subsequent visibility to the tax authority. Gupta et al. (2014) and Henry et al. (2016) find evidence that FIN 48 adoption was followed by a reduction in corporate tax planning, consistent with firms viewing tax avoidance as a higher risk investment

<sup>7</sup> See the articles "Wall Street's dead end" *The New York Times* (February 13, 2011), "Missing: Public companies – Why is the number of publicly traded companies in the US declining?" *CFO Magazine* (March 22, 2011), and "The endangered public company: The big engine that couldn't" *The Economist* (May 19, 2012).

<sup>8</sup> The new disclosures include: (i) a reconciliation of the beginning and ending balance of uncertain tax benefits, (ii) the amount of unrecognized tax benefits that would impact the effective tax rate if recognized, (iii) the amount of accrued interest and penalties arising from the unrecognized tax benefits, (iv) a brief description of open tax years by major jurisdiction, and (v) a discussion of whether the firm expects any changes to the unrecognized tax benefit balance within the next twelve months.

<sup>9</sup> See "Accounting for 'Uncertainty' in Income Taxes" *Lehman Brothers Equity Research Report* (July 17, 2006) and "FASB hoists Red Flags Higher for Taxman" *CFO.com* (July 14, 2006).

under the new regime. My study examines a previously unconsidered response to FIN 48: firms choosing to exit the public market rather than reveal the weakness of their tax positions to the government.

## 2.2. Tax-based proprietary costs and the decision to list publicly

Recent work argues that proprietary costs of disclosure pose a trade-off to firms considering public listing (Aghamolla and Thakor, 2022). Operating as a public firm provides benefits such as improved access to external financing, but comes at a cost of revealing confidential information that may be used by competitors. Although proprietary costs have traditionally been considered in the context of product market competitors, recent studies have begun to explicitly consider proprietary costs in the context of information provided to the tax authority. For instance, both Robinson and Schmidt (2013) and Deng et al. (2021) find that more tax aggressive firms provide lower quality disclosures over concerns that they will be used for tax enforcement. Hope et al. (2013) find increased tax avoidance among firms that discontinue geographic earnings disclosures, arguing that non-disclosure helps to hide tax avoidance from the government. Bozanic et al. (2017) provide credence to the notion of tax-based proprietary costs by showing that the IRS routinely downloads public firms' financial statements. Collectively, these studies imply that public listing may entail a substantial cost in the form of increased visibility to the tax authority.<sup>10</sup>

Two additional studies in this area examine tax payments around IPOs. Pagano et al. (1998) find that newly public firms in Italy pay more in taxes in the year after their IPO, which the authors attribute to an increase in visibility to the tax authorities. Dobridge et al. (2021) find in a sample of U.S. IPOs that firms are more likely to make tax payments immediately after going public, and pay higher taxes. Although the findings in both studies are suggestive of a tax cost to being publicly listed, they do not directly test whether tax-based proprietary costs discourage public listing.

## 2.3. Private equity and the going-private decision

Private equity funds offer several advantages to public firms interested in pursuing a take-private transaction. The first advantage is speed. Private equity buyouts can be executed relatively quickly due to streamlined investment committee vetting processes. The second advantage is a high certainty of completion. Private equity buyers are traditionally less likely to face regulatory delays or blocks due to antitrust concerns, compared to operating firm buyers (Keyte and Schwartz, 2016). Finally, private equity buyers are more likely than third-party operating firms to retain incumbent management to continue to manage the firm (Fidrmuc et al., 2012). Collectively, these factors make private equity an appealing option for managers of public firms seeking to go private.

An anecdote can help to highlight these considerations and illustrate the typical timeline in a going-private transaction. Sabre Holdings Corporation ("Sabre"), a travel technology company, was acquired by two private equity firms in a transaction executed between FIN 48 enactment and adoption.<sup>11</sup> In the summer of 2006, shortly after the FASB issued FIN 48, Sabre began a "re-examination of strategic options ... including an acquisition by private equity firms in a transaction often referred to as a take-private transaction." After these discussions, Sabre identified qualified private equity firms willing to take the company private, and over the next three months, Sabre's management engaged in formal talks with a select group of prospective acquirers. In November 2006, Sabre's management and board discussed the initial proposals and expressed support for a private equity deal due to "the relatively high level of deal certainty and relatively short time required for closing." Sabre received two formal bids on Dec. 8th, at which time the board emphasized the "importance of proceeding quickly ... to minimize the risks associated with delay." On Dec. 11th, the board unanimously approved the merger agreement. The take-private transaction was consummated on Mar. 30th, 2007, one day before the end of Sabre's first fiscal quarter for which the FIN 48 disclosures were to take effect.

## 2.4. Hypothesis

My central hypothesis is rooted in the idea that the FIN 48 mandated disclosure requirements were expected to increase the visibility of public taxpayers' uncertain tax positions to the government, allowing the government to use its scarce resources to more accurately target taxpayers with weaker positions. The anticipated increase in scrutiny by the tax authority effectively increased the cost of operating as a public firm, particularly for firms with more aggressive tax positions. Since the final FIN 48 regulations were issued in July 2006 but did not take effect until fiscal years beginning after December 15, 2006, firms had a window of time during which they could go private preemptively and thereby avoid revealing the weakness of their underlying tax positions to the government. Thus, my hypothesis is as follows:

**H:** Tax aggressive firms exhibit an increased propensity to go private between FIN 48 enactment and adoption, compared to non-tax aggressive firms.

<sup>10</sup> A related stream of research suggests firms worry about reputational costs from disclosing tax aggressive behavior to investors and customers (e.g., Graham et al., 2014), and that these costs influence disclosure strategies (Hoopes et al., 2018; Belnap, 2022) and real decisions such as whether to locate subsidiaries in tax havens (Dyregang et al., 2016).

<sup>11</sup> Details are from the "Background of the Merger" section of Sabre's DEFM 14A SEC filing. More details of the deal timeline are shown in Exhibit OA2 in the online appendix.

**Table 1**  
Sample selection.

Panel A: Going-private sample		
Description	Change in no. of obs	No. of obs remaining
Acquisitions of U.S. public targets announced from Jan. 1, 2005 to Jun. 30, 2008		961
Exclude deals with non-private acquirers	(643)	318
Exclude deals unable to match target to CRSP delisting file	(6)	312
Exclude deals with SIC codes 4900–4999 and 6000–6999 (financial and utilities firms)	(61)	251
Exclude deals due to bankruptcy or debt restructuring of the target	(8)	243
Exclude deals with missing data required for key variable construction	(30)	213
Add hand-collected going-private deals missing from SDC	10	223
Exclude deals announced after FIN 48 enactment but completed after first FIN 48 disclosures	(3)	220
Final number of going-private transactions		<b>220</b>
Panel B: Firm-quarter sample		
Description	Change in no. of obs	No. of obs remaining
Calendar firm-quarters based on Compustat from Jan. 1, 2005 to Jun. 30, 2008		114,146
Exclude firm-quarters with SIC codes 4900–4999 and 6000–6999 (financial and utilities firms)	(24,961)	89,185
Exclude firm-quarters with missing values for key variable construction	(28,695)	60,490
Final number of calendar firm-quarters		<b>60,490</b>

Notwithstanding the above discussion, there are reasons I may not observe the predicted outcome. For instance, the IRS already possesses a rich source of information about a firm's potential tax avoidance in the tax return itself, making it unclear whether public financial statements provide meaningful incremental information. As FASB board member Katherine Schipper stated in one board meeting, "the IRS has a far more detailed and effective 'roadmap' in its schedule M-3 than it would be provided by any disclosure in the final interpretation" (FASB, 2006b). Moreover, even if firms perceive the prospect of increased governmental scrutiny arising from FIN 48 disclosures as costly, the costs may not be sufficient to drive a firm private and thus surrender the benefits of being publicly traded, such as the ability to more easily raise capital, the use of the firm's own stock as currency for acquisitions, and a liquid market for the firm's shares.

### 3. Sample and data

#### 3.1. Sample description

Table 1 Panel A outlines the selection process to obtain the sample of going-private events. Drawing from Thomson Reuters's Securities Data Company Platinum database (SDC), I start with all acquisitions of U.S. public targets announced between January 1, 2005 and June 30, 2008.<sup>12</sup> I exclude exchange offers, spinoffs, recapitalizations, and repurchases, and limit the sample to deals in which the buyers own 100 percent of the target upon the deal's completion. I classify an acquirer as private when both it and its ultimate parents are private (Kamar et al., 2008). To ensure the deals are completed, I exclude target firms without a match in the CRSP delisting file, or that do not have SEC Form 15 or Form 25 filings pertaining to termination of security registration. Financial services and utilities firms (SIC codes 4900–4999 and 6000–6999) are excluded as well as transactions resulting from the target's bankruptcy or debt restructuring, and transactions missing the necessary data to construct the main tax aggressiveness proxies and control variables. These initial restrictions yield 213 total going-private transactions. I make two additional sample adjustments to ensure its completeness and accuracy. First, I manually examine Compustat firms that cease making SEC filings during the sample period and find ten additional going-private transactions not present in SDC. Second, I exclude three deals which are announced after FIN 48 enactment but not completed until after the target firm files its first quarterly disclosures containing FIN 48 information. As shown in Table 1, Panel B, the sample of going-private transactions is merged with the CRSP-Compustat database to construct a panel of calendar firm-quarters, where firm characteristics are calculated using values as of the end of the most recent fiscal year. The final panel comprises 60,490 calendar firm-quarters during the sample period, 220 of which represent quarters in which a firm announces a going-private transaction.

#### 3.2. Variable measurement

##### 3.2.1. Going-private transaction types

Public firms can go private through various methods. Following Bharath and Dittmar (2010), I sort going-private firms into two categories: buyouts by private equity firms (which sometimes include management involvement as well), and buyouts by

<sup>12</sup> I focus on the announcement date of the transaction rather than the effective date in order to approximate as closely as possible the date on which the firm makes the decision to go private.

private operating firms. I categorize each transaction using details provided in SDC's deal synopsis. If the SDC detail is missing or unclear, I manually inspect the target firm's SEC filings to verify the nature of the transaction. Based on this process, I find that of the 220 going-private transactions in my sample, 147 (73) represent buyouts by private equity firms (private third-party operating firms).

### 3.2.2. Tax aggressiveness proxies

Hanlon and Heitzman (2010) emphasize that researchers must carefully consider whether their measure of tax avoidance is appropriate for their particular research question. Because my research question relates to firms disclosing the riskiness of their underlying tax positions, my aim is to capture activities on the aggressive end of the spectrum. At the same time, I want to ensure my findings are robust to an array of plausible proxies. With these goals in mind, I employ three commonly used proxies for tax aggressiveness throughout my analysis.

My first proxy is Wilson's (2009) predicted probability of tax sheltering (*Tax Shelter Score*), constructed as a predicted value between zero and one based on characteristics such as firm size, performance, foreign income, and R&D, among others. Prior research has found the tax benefits of tax shelters account for a large proportion of aggregate FIN 48 tax reserves (Lisowsky et al., 2013), suggesting a tight link between tax shelters and information contained in the new disclosure mandate.<sup>13</sup> My second proxy is based on the firm's book-tax differences (BTDs). For parsimony, I follow Kim et al. (2011) and use factor analysis to extract a common factor (*BTD Factor*) from three frequently used measures: total book-tax differences (*Total BTD*), abnormal total book-tax differences (*Abnormal BTD*), and the ETR differential (*ETR Differential*). My third proxy aims to capture the extent of corporate cash tax avoidance (*Cash Tax Diff*), and is measured as the difference between cash taxes paid and the product of the firm's pre-tax book income and the statutory tax rate, scaled by lagged total assets (Henry and Sansing, 2018). I multiply the result by negative one such that a higher value of *Cash Tax Diff* denotes more aggressive tax planning.<sup>14</sup>

### 3.2.3. Period between FIN 48 enactment and adoption

I construct an indicator variable, *FIN48*, to capture calendar quarters between FIN 48's enactment in July 2006 and adoption in fiscal years beginning after December 15, 2006. Hence, for firms with December fiscal year-ends (FYE), *FIN48* equals one for calendar quarters 2006Q3–Q4, and zero otherwise. Since firms with non-December FYEs have later effective dates, I extend the period for which *FIN48* equals one based on fiscal year-end. For firms with fiscal year-ends from January–May (June–September, October–November), *FIN48* equals one for calendar quarters 2006Q3–2007Q1 (2006Q3–2007Q2, 2006Q3–2007Q3), and zero otherwise.

### 3.2.4. Control variables

I follow prior literature and control for factors shown to be associated with the propensity to go private or to be acquired. In particular, I control for firm size (*Size*), book-to-market value of equity (*BTM*), return on assets (*ROA*), leverage (*Leverage*), liquidity (*Liquidity*), net operating loss carryforwards (*NOL*), firm age (*Firm Age*), historical stock return (*Ret 1 Yr*) and stock return volatility (*Ret Volatility*). Prior work has found that *Size* and *Ret Volatility* tend to be negatively associated with going-private propensity implying that large firms and firms with more volatile stock returns are less likely to go private, whereas *BTM* and *ROA* are positively associated with going-private propensity suggesting that more value-oriented firms with solid operating performance are more likely to private (e.g., Mehran and Peristiani, 2010; Stuart and Yim, 2010; Fidrmuc et al., 2013; Doidge et al., 2017). The predictions for *Leverage*, *Liquidity*, *NOL* and *Firm Age* are less clear as prior findings are mixed or insignificant with respect to these characteristics. Because Mehran and Peristiani (2010) find evidence that firms are more likely to go private when they fail to attract financial visibility and investor interest, I also include controls for trading volume in the stock (*Share Turnover*), institutional investor ownership (*Inst Ownership*), analyst coverage (*Analyst Coverage*), and market attention received by the firm (*Market Attention*).

## 3.3. Descriptive statistics

Table 2 Panel A presents summary statistics for the sample covering 2005Q1–2008Q2. The mean probability that a firm goes private in any given quarter (*Go Private*) is 0.36 percent. Similarly, the mean quarterly probability that a firm goes private in a transaction involving a private equity-led (private operating firm) buyout is 0.24 (0.12) percent. The mean values of *Tax Shelter Score* and *BTD Factor* are 0.47 and 0.24, comparable to the respective figures (0.48 and 0.16) in Kim et al. (2011). The mean value of *Cash Tax Diff* is  $-0.02$ , similar to the corresponding figure in Henry and Sansing (2018) of 0.015, noting that I multiply their measure by negative one such that higher values indicate more tax aggressive firms.

Table 2 Panel B displays the quarterly number of going-private transactions announced in total, and by transaction type (i.e., private equity-led buyouts and acquisitions by private operating firms), for the sample period. The table reveals that the number of private equity-led transaction announcements spikes from 8 events in 2006Q2 to 21 in 2006Q3, and remains elevated through 2007Q2 before declining back to previous levels in subsequent quarters.

<sup>13</sup> Lisowsky et al. (2013) find that the tax benefits of tax shelters account for up to 48% of the aggregate FIN 48 tax reserves in their sample of public firms.

<sup>14</sup> Although each proxy captures a somewhat different aspect of tax aggressiveness, they are significantly positively correlated, with Pearson (Spearman) correlations among the three proxies ranging from 0.46 to 0.55 (0.55–0.61).

**Table 2**  
Descriptive statistics.

Panel A: Firm-quarter descriptive statistics						
Variables	N	Mean	SD	P25	P50	P75
Dependent variables:						
<i>Go Private</i> <sup>a</sup>	60,490	0.36	6.02	0.00	0.00	0.00
<i>Go Private - PE &amp; Mgmt</i> <sup>d</sup>	60,490	0.24	4.92	0.00	0.00	0.00
<i>Go Private - Operating</i> <sup>a</sup>	60,490	0.12	3.47	0.00	0.00	0.00
Tax aggressiveness proxies:						
<i>Tax Shelter Score</i> <sup>b</sup>	60,490	0.47	0.38	0.06	0.48	0.87
<i>BTM Factor</i> <sup>b</sup>	60,490	0.24	0.31	0.22	0.34	0.40
<i>Cash Tax Diff</i> <sup>b</sup>	60,490	-0.02	0.06	-0.03	0.00	0.01
<i>Adj. GAAP ETR 3 Yr</i>	59,154	-0.01	0.80	-0.14	0.01	0.10
<i>Adj. Cash ETR 3 Yr</i>	59,154	-0.02	0.55	-0.16	0.01	0.09
<i>Predicted UTB</i>	56,500	0.01	0.10	0.00	0.01	0.02
<i>Tax Risk</i>	36,203	0.14	2.31	-1.69	0.15	1.92
Other variables:						
<i>FIN 48</i>	60,490	0.18	0.39	0.00	0.00	0.00
<i>Size</i>	60,490	5.31	2.23	3.65	5.32	6.86
<i>BTM</i>	60,490	0.22	1.50	0.18	0.36	0.61
<i>ROA</i>	60,490	-0.14	0.50	-0.13	0.02	0.07
<i>Leverage</i>	60,490	0.35	0.96	0.00	0.05	0.27
<i>Liquidity</i>	60,490	0.67	1.18	0.18	0.35	0.67
<i>NOL</i>	60,490	0.30	1.16	0.00	0.00	0.09
<i>Firm Age</i>	60,490	2.46	0.83	2.11	2.47	2.96
<i>Ret 1 Yr</i>	60,490	0.01	0.42	-0.18	-0.01	0.18
<i>Ret Volatility</i>	60,490	0.49	0.23	0.34	0.46	0.54
<i>Share Turnover</i>	60,490	1.95	1.75	0.82	1.82	2.23
<i>Inst Own</i>	60,490	0.42	0.34	0.03	0.41	0.73
<i>Analyst Coverage</i>	60,490	1.11	1.01	0.00	1.09	1.95
<i>Market Attention</i>	60,490	4.90	2.11	4.30	5.59	6.28

Panel B: Number of going-private transactions announced by quarter and type

Quarter	<i>Go Private</i>		<i>Go Private - PE &amp; Mgmt</i>		<i>Go Private - Operating</i>	
	Num	Pct	Num	Pct	Num	Pct
2005 Q1	10	4.5%	5	3.3%	5	6.8%
2005 Q2	11	4.9%	7	4.7%	4	5.5%
2005 Q3	14	6.3%	9	6.0%	5	6.8%
2005 Q4	14	6.3%	10	6.7%	4	5.5%
2006 Q1	12	5.4%	10	6.7%	2	2.7%
2006 Q2	19	8.5%	8	5.3%	11	15.1%
2006 Q3	25	11.2%	21	14.0%	4	5.5%
2006 Q4	24	10.8%	18	12.0%	6	8.2%
2007 Q1	21	9.4%	13	8.7%	8	11.0%
2007 Q2	21	9.4%	15	10.0%	6	8.2%
2007 Q3	11	4.9%	10	6.7%	1	1.4%
2007 Q4	13	5.8%	8	5.3%	5	6.8%
2008 Q1	15	6.7%	9	6.0%	6	8.2%
2008 Q2	13	5.8%	7	4.7%	6	8.2%
<b>Total</b>	<b>223</b>	<b>100%</b>	<b>150</b>	<b>100%</b>	<b>73</b>	<b>100%</b>

Panel C: Comparison of firm means by group

Firm group: Variables	(1)	(2)	(3)	(1)-(3)	(1)-(2)
	Go Private <i>FIN 48</i> = 1 Mean	Go Private <i>FIN 48</i> = 0 Mean	Never Go Private Mean	Difference	Difference
<i>Tax Shelter Score</i> <sup>b</sup>	0.61	0.50	0.47	0.14***	0.11**
<i>BTM Factor</i> <sup>b</sup>	0.37	0.34	0.24	0.13***	0.03**
<i>Cash Tax Diff</i> <sup>b</sup>	0.00	-0.01	-0.02	0.02**	0.01**
<i>Size</i>	5.78	5.42	5.31	0.47*	0.36
<i>BTM</i>	0.56	0.32	0.22	0.34*	0.24
<i>ROA</i>	0.03	-0.02	-0.14	0.17***	0.05*
<i>Leverage</i>	0.24	0.54	0.35	-0.11	-0.30*
<i>Liquidity</i>	0.68	0.75	0.67	0.01	-0.07
<i>NOL</i>	0.22	0.34	0.30	-0.08	-0.12
<i>Firm Age</i>	2.66	2.52	2.46	0.20*	0.14
<i>Ret 1 Yr</i>	-0.06	0.00	0.01	-0.07	-0.06
<i>Ret Volatility</i>	0.41	0.43	0.49	-0.08***	-0.02
<i>Share Turnover</i>	1.54	1.53	1.95	-0.41*	0.01
<i>Inst Own</i>	0.40	0.40	0.42	-0.02	0.00

Table 2 (continued)

Panel C: Comparison of firm means by group					
Firm group: Variables	(1) Go Private <i>FIN 48</i> = 1 Mean	(2) Go Private <i>FIN 48</i> = 0 Mean	(3) Never Go Private Mean	(1)–(3) Difference	(1)–(2) Difference
<i>Analyst Coverage</i>	1.39	1.28	1.11	0.28**	0.11
<i>Market Attention</i>	6.06	5.34	4.90	1.16***	0.72**
<b>No. of observations</b>	<b>66</b>	<b>154</b>	<b>60,270</b>		

This table presents descriptive information for the sample and variables of interest. Panel A reflects the firm-quarters with the necessary data for the going-private tests during the calendar quarters 2005Q1 to 2008Q2. Panel B lists the total number of going-private transactions by the quarter in which they are announced, as well as the quarterly number of announced going-private transactions by transaction type (private equity and management-involved buyouts versus third-party private operating firm acquirers). Panel C presents mean values of the variables of interest for three different groups of firms: firms that announce a going-private transaction during the quarters between *FIN 48* enactment and adoption (column 1); firms that announce a going-private transaction outside of the period between *FIN 48* enactment and adoption (column 2); and firms that do not announce a going-private transaction during the sample period (column 3). Details of variable construction are contained in Appendix A.

\* The above table includes all going-private transactions announced by quarter. In the regression analysis, three transactions announced during 2006Q3-Q4 are excluded because they are completed after the firm's initial filings containing *FIN 48* information.

<sup>a</sup> The values of Go Private, Go Private - PE & Mgmt, and Go Private - Operating are multiplied by 100 to ease interpretation of the coefficients when used in regressions.

<sup>b</sup> The Tax Shelter Score, BTD Factor, and Cash Tax Diff variables are unadjusted in the table above, but when used as independent variables in regressions they are centered around zero to facilitate interpretation.

**Table 2** Panel C presents mean values for key variables across three subsamples of firms: firms that announce a going-private transaction in the quarters between *FIN 48* enactment and adoption (column 1); firms that announce a going-private transaction in other quarters (column 2); and firms that do not announce a going-private transaction during the sample period (column 3). The last two columns show a comparison of the mean values for firms that announce going-private transactions when *FIN 48* = 1 and the other two groups, including the results of *t*-tests for statistical significance of the differences between groups. The panel reveals that firms announcing going-private transactions when *FIN 48* = 1 are more tax aggressive (across all three proxies for tax aggressiveness) compared to firms in the other groups, in addition to being somewhat better-performing, and receiving more market attention.

### 3.4. Research design

In order to draw causal inferences about the effect of tax-based proprietary costs on firms' public listing decisions, I use *FIN 48* enactment as a quasi-experimental setting (e.g., Armstrong et al., 2022). *FIN 48* imposed significant tax-based proprietary costs on public firms, and I examine two primary dimensions of variation around its enactment. First, I exploit the timing between *FIN 48* enactment and adoption. Although *FIN 48* was enacted on July 13, 2006, it was not made effective until fiscal years beginning after December 15, 2006. Consequently, the first financial statements containing *FIN 48* disclosures were those reporting the results of fiscal 2007Q1. Thus, firms were provided with a window after *FIN 48* enactment in which they could preemptively go private to avoid making the new disclosures. I exploit this feature by focusing on the propensity to announce a going-private transaction between *FIN 48* enactment and adoption compared to the surrounding quarters. For instance, for firms with December fiscal year-ends, I compare the going-private propensity during the two quarters between *FIN 48* enactment and adoption (2006Q3-Q4) to the six quarters prior to *FIN 48* enactment (2005Q1-2006Q2) and the six quarters following its adoption (2007Q1-2008Q2). Fig. 1 provides an illustration of how the research design incorporates the timing surrounding *FIN 48* enactment and adoption.

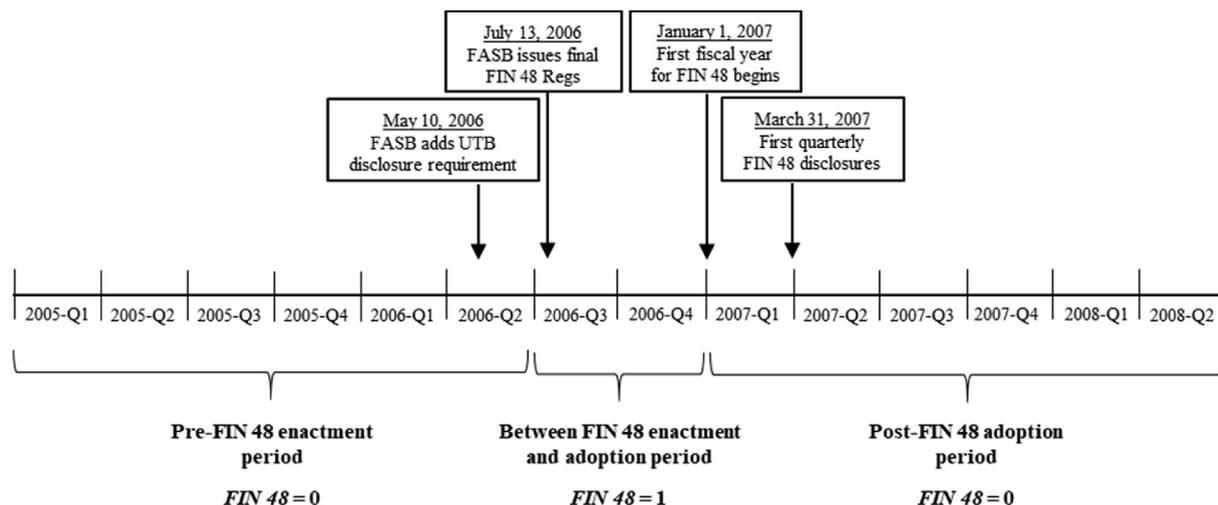
The second dimension of variation is within-industry heterogeneity across firms based on exposure to the *FIN 48* disclosures. Because *FIN 48* mandates that tax positions more likely than not to be overturned upon challenge must be disclosed, I construct a continuous treatment variable that measures tax aggressiveness immediately prior to *FIN 48* enactment.<sup>15</sup> The idea is that firms with more aggressive tax positions will be more affected by *FIN 48*, and thus have stronger incentives to go private prior to adopting *FIN 48*.

To test my prediction, I estimate the following linear probability difference-in-differences (DID) regression at the firm-quarter level:

$$Go\ Private_{i,t} = \alpha + \beta_1 FIN\ 48_{i,t} + \beta_2 FIN\ 48_{i,t} \times Tax\ Aggressive_i + \beta_3 Tax\ Aggressive_i + \beta_k Controls_{i,t} + \delta_{ind} + \gamma_t + \varepsilon_{i,t} \quad (1)$$

In the equation above, *i* and *t* index firms and calendar year-quarters, respectively. The dependent variable, *Go Private*<sub>*i,t*</sub> is an indicator variable equal to one if firm *i* announces a going-private transaction in quarter *t* (multiplied by 100 to ease

<sup>15</sup> Although the classic DID model is typically understood using binary independent variables, I employ a more generalized version in which the treatment variable is continuous (Atanasov and Black, 2016; Armstrong et al., 2022).



**Fig. 1.** Research design timeline around FIN 48 enactment and adoption for firms with December FYEs. The figure below illustrates the timing of certain key events around the enactment and adoption of FIN 48, and the implementation of those events in the primary research design. On May 10, 2006, the FASB agreed to draft the final interpretation, and added the requirement to disclose a tabular reconciliation of beginning and ending balances of unrecognized tax benefits. On July 13, 2006, the FASB issued the final version of FIN 48, to be made effective for fiscal years beginning after December 15, 2006. Thus, public firms' 2007 first quarter financial statements were the first public disclosures required to contain the new FIN 48 tax information. For firms with December fiscal year-ends, *FIN 48* = 1 for the two calendar quarters 2006 Q3–Q4, and *FIN 48* = 0 for the neighboring six calendar quarter windows (2005Q1–2006Q2 and 2007Q1–2008Q2). For firms with fiscal year-ends from January–May (June–September, October–November), *FIN 48* = 1 for calendar quarters 2006Q3–2007Q1 (2006Q3–2007Q2, 2006Q3–2007Q3), and otherwise *FIN 48* = 0.

interpretation of the coefficients), and zero otherwise.<sup>16</sup>  $FIN48_{i,t}$  is an indicator variable equal to one if quarter  $t$  occurs between FIN 48 enactment and adoption for firm  $i$ , and zero otherwise.  $TaxAggressiveness_i$  is a measure of firm  $i$ 's tax aggressiveness as of the end of the fiscal year prior to FIN 48 enactment, proxied by *Tax Shelter Score*, *BTD Factor*, and *Cash Tax Diff*. The interaction between these two variables is the DID estimator, and the  $\beta_2$  coefficient gives the marginal impact of a change in a firm's tax aggressiveness between FIN 48 enactment and adoption, relative to the surrounding quarters. *Controls* represents the vector of control variables described above, whereas  $\delta_{ind}$  and  $\gamma_t$  represent SIC two-digit industry fixed effects and calendar year-quarter fixed effects, respectively.

My prediction is that firms anticipating greater impact from FIN 48 are more likely to go private between its enactment and adoption, since they will be forced to reveal the underlying weakness of their tax positions to the IRS. Specifically, I predict  $\beta_2 > 0$ , denoting that firms with more aggressive underlying tax positions exhibit a larger increase in going-private propensity between FIN 48 enactment and adoption, compared to firms with less aggressive tax positions.

## 4. Main results

### 4.1. Propensity to go private between FIN 48 enactment and adoption

Table 3 Panel A shows the results from estimating Eq. (1) using three different proxies for tax aggressiveness: *Tax Shelter Score* (columns 1–2), *BTD Factor* (columns 3–4), and *Cash Tax Diff* (columns 5–6). The proxies are centered around zero such that the main effect on *FIN48* can be interpreted as the change in the propensity to announce a going-private transaction between FIN 48 enactment and adoption for a firm at the median level of tax aggressiveness.

In column 1, the positive coefficient on *FIN48* (coef. = 0.287; t-stat. = 3.70) indicates the median tax aggressive firm is more likely to announce a going-private transaction in the quarters between FIN 48 enactment and adoption as compared to the surrounding quarters. Moreover, the positive coefficient on  $FIN48 \times Tax\ Shelter\ Score$  (coef. = 0.515; t-stat. = 2.88) indicates a larger increase in going-private propensity for more tax aggressive firms, compared to less tax aggressive firms. Column 2 shows a similar result after controlling for firm characteristics, industry and year-quarter fixed effects. Economically, a one standard deviation increase in *Tax Shelter Score* leads to a 0.20 percentage point increase in the likelihood of a going-private transaction during the quarters between FIN 48 enactment and adoption, representing a 54.4% increase in going-private

<sup>16</sup> I use a linear probability model, rather than a probit or logit specification, due to the fact that marginal effects for interaction terms do not have a clear interpretation in such nonlinear models. Moreover, with the inclusion of fixed effects, these terms may not be feasibly computed (e.g., Ai and Norton, 2003; Greene, 2010). Nonetheless, in untabulated analyses I find that my inferences are unchanged when estimating probit and logit specifications.

**Table 3**  
Tax aggressive firms' propensity to go private around FIN 48 enactment.

Panel A: Main results							
Dependent variable:		Go Private					
Tax aggressiveness proxy:	Pr. sign	Tax Shelter Score		BTD Factor		Cash Tax Diff	
<i>FIN 48</i>		0.287*** (3.70)	0.480** (2.13)	0.326*** (3.75)	0.514** (2.25)	0.315*** (3.76)	0.506** (2.22)
<b><i>FIN 48</i> × Tax Aggressive</b>	+	<b>0.515***</b> <b>(2.88)</b>	<b>0.509***</b> <b>(2.85)</b>	<b>0.392***</b> <b>(2.91)</b>	<b>0.375***</b> <b>(2.76)</b>	<b>1.758***</b> <b>(3.12)</b>	<b>1.639***</b> <b>(2.91)</b>
<i>Tax Aggressive</i>		0.056 (0.99)	0.022 (0.24)	0.292*** (5.86)	0.121* (1.87)	1.077*** (5.27)	0.483* (1.77)
<i>Size</i>			-0.053*** (-3.22)		-0.044*** (-3.01)		-0.043*** (-2.97)
<i>BTM</i>			0.045** (2.18)		0.045** (2.15)		0.046** (2.22)
<i>ROA</i>			0.132*** (4.49)		0.090*** (3.29)		0.104*** (3.91)
<i>Leverage</i>			0.028 (0.73)		0.026 (0.69)		0.027 (0.72)
<i>Liquidity</i>			-0.009 (-0.34)		-0.009 (-0.34)		-0.003 (-0.13)
<i>NOL</i>			0.030 (1.00)		0.035 (1.18)		0.034 (1.13)
<i>Firm Age</i>			0.030 (1.07)		0.028 (1.01)		0.029 (1.05)
<i>Ret 1 Yr</i>			0.017 (0.29)		0.019 (0.31)		0.018 (0.30)
<i>Ret Volatility</i>			-0.312** (-2.43)		-0.318** (-2.51)		-0.316** (-2.49)
<i>Share Turnover</i>			-0.043*** (-3.54)		-0.044*** (-3.56)		-0.044*** (-3.55)
<i>Inst Own</i>			-0.594*** (-3.81)		-0.587*** (-3.79)		-0.589*** (-3.80)
<i>Analyst Coverage</i>			0.189*** (3.73)		0.190*** (3.75)		0.191*** (3.76)
<i>Market Attention</i>			0.081*** (3.39)		0.081*** (3.36)		0.082*** (3.40)
Year-Qtr FE		No	Yes	No	Yes	No	Yes
Industry FE (SIC 2-digit)		No	Yes	No	Yes	No	Yes
S.E. clustered by firm		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		60,490	60,490	60,490	60,490	60,490	60,490
No. of going-private events		220	220	220	220	220	220
R-Squared		0.06%	0.43%	0.08%	0.42%	0.06%	0.42%
Panel B: Results for entropy balanced matching sample of high- and low-tax aggressive firms							
Dependent variable:		Go Private					
Tax aggressiveness proxy:	Pr. sign	Tax Shelter Score		BTD Factor		Cash Tax Diff	
<i>FIN 48</i>			0.249 (1.02)		0.254 (0.95)		0.212 (0.69)
<b><i>FIN 48</i> × High Tax Aggressive</b>	+		<b>0.644***</b> <b>(3.39)</b>		<b>0.398**</b> <b>(2.15)</b>		<b>0.459**</b> <b>(2.35)</b>
<i>High Tax Aggressive</i>			0.072 (0.73)		0.043 (0.69)		-0.046 (-0.60)
Controls			Yes		Yes		Yes
Year-Qtr FE			Yes		Yes		Yes
Industry FE (SIC 2-digit)			Yes		Yes		Yes
S.E. clustered by firm			Yes		Yes		Yes
No. of observations			60,490		60,490		60,490
No. of going-private events			220		220		220
R-Squared			1.36%		0.49%		0.52%

Panel A presents results examining the propensity of tax aggressive firms to announce a going-private transaction around the enactment of FIN 48. Columns 1–2 (3–4, 5–6) show the results using Tax Shelter Score (BTD Factor, Cash Tax Diff), measured as of the fiscal year-end prior to FIN 48 enactment. Panel B presents the results after entropy balancing the sample of firms with low-tax aggressive (below-median) values to match the distributions of the firms with high-tax aggressive (above-median) values. High Tax Aggressive is an indicator variable equal to one for firms with above-median values for the relevant tax aggressiveness proxy, and zero otherwise. In both panels, the sample consists of firm-quarter observations during calendar quarters 2005Q1 to 2008Q2. The dependent variable equals one if the firm announces a going-private transaction during the quarter (multiplied by 100 to ease interpretation of the coefficients), and zero otherwise. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by firm. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

propensity relative to the sample mean.<sup>17</sup> Columns 3–6 show similar results after replacing the *Tax Shelter Score* proxy with *BTD Factor* and *Cash Tax Diff*. A one standard deviation increase in *BTD Factor* (*Cash Tax Diff*) leads to an increase in going-private propensity of 33.8% (29.3%) between FIN 48 enactment and adoption, relative to the sample mean.

To provide more concrete estimates of the magnitude of the effect of FIN 48, I compute difference-in-differences (DID) estimates after partitioning the sample into firms with high tax aggressiveness (“treated” firms) and low tax aggressiveness (“control” firms). The computations are displayed in [Appendix B](#). The DID estimate based on *Tax Shelter Score* indicates that FIN 48 caused 27.0 excess going-private events between its enactment and adoption. The estimates based on *BTD Factor* and *Cash Tax Diff* show that FIN 48 enactment caused 20.1 and 19.7 excess going-private events, respectively. In other words, of the 66 going-private events between FIN 48 enactment and adoption, approximately 20–27 (30.3%–40.9%) can be attributed to tax-based proprietary costs and likely would not have occurred in the absence of FIN 48.

#### 4.2. Entropy balancing tax aggressive and non-tax aggressive firms

A potential concern with the above finding is that tax aggressive and non-tax aggressive firms may be fundamentally different in ways that affected their propensity to go private between FIN 48 enactment and adoption for reasons other than tax-based proprietary costs. To alleviate this concern, I employ entropy balancing to match non-tax aggressive firms (i.e., control firms) to tax aggressive firms (i.e., treatment firms).<sup>18</sup> The matching variables are those shown in [Table 3](#) Panel A to be significantly associated with the going-private decision (i.e., *Size*, *BTM*, *ROA*, *Ret Volatility*, *Share Turnover*, *Inst Own*, *Analyst Coverage*, and *Market Attention*). Based on pre-FIN 48 distributions for each covariate, I use entropy balancing to reweight the sample of firms with low tax aggressive (below-median) values such that the distributions of covariates match those of firms with high tax aggressive (above-median) values.<sup>19</sup>

[Table 3](#) Panel B presents the regression results employing the entropy-balanced samples. *High Tax Aggressive* is an indicator variable equal to one for firms with above-median tax aggressiveness values, and zero otherwise. In column 1, the insignificant coefficient on *FIN48* (coef. = 0.249; t-stat. = 1.02) indicates that firms with below-median *Tax Shelter Score* values do not exhibit an increased propensity to go private between FIN 48 enactment and adoption.<sup>20</sup> However, the positive coefficient on *FIN48* × *High Tax Aggressive* (coef. = 0.644; t-stat. = 3.39) denotes that firms with high *Tax Shelter Score* values exhibit a significant increase in going-private propensity between FIN 48 enactment and adoption, compared to those with low *Tax Shelter Score* values, even after carefully matching the two groups of firms on their other covariates. Columns 2–3 yield similar results for the *BTD Factor* and *Cash Tax Diff* proxies. The findings help to mitigate concerns about comparability across tax aggressive and non-tax aggressive firms.

#### 4.3. Parallel trends before FIN 48 enactment and following FIN 48 adoption

Next, I investigate the parallel trends assumption by examining the quarterly going-private propensity for tax aggressive and non-tax aggressive firms around FIN 48 (e.g., [Angrist and Pischke, 2008](#); [Armstrong et al., 2022](#)). [Fig. 2](#) plots the coefficients from estimating a modified Eq. (1) employing the *Tax Shelter Score* proxy in which *FIN48* is replaced with an indicator for each quarter from 2004Q3–2008Q2 and includes a 95% confidence interval calculated based on standard errors clustered at the firm-level. The figure shows that the coefficients for all quarters before FIN 48 enactment in 2006Q3 are statistically indistinguishable from zero. In contrast, the significantly positive coefficient in 2006Q4 represents a spike in announcements of going-private transactions among tax aggressive firms just before FIN 48 becomes effective. Furthermore, the coefficients in the post-FIN 48 adoption period (2007Q1–2008Q2) revert to insignificance, indicating a return to pre-FIN 48 going-private likelihood among tax aggressive firms.<sup>21</sup>

The evidence in [Fig. 2](#) helps to further mitigate endogeneity concerns and allows me to more confidently attribute my main findings to tax aggressive firms’ desire to avoid the tax-based proprietary costs created by FIN 48. For instance, one possible concern pertains to selection bias – that firms choosing to go private are those that do not expect to use the public equity markets in the near future. To the extent that tax aggressiveness is correlated with the need for public financing, I may mistakenly attribute firms’ going-private decisions to tax-based proprietary costs when the primary driver is the lack of need for public financing. However, the evidence indicates that tax aggressive and non-tax aggressive firms exhibit similar going-

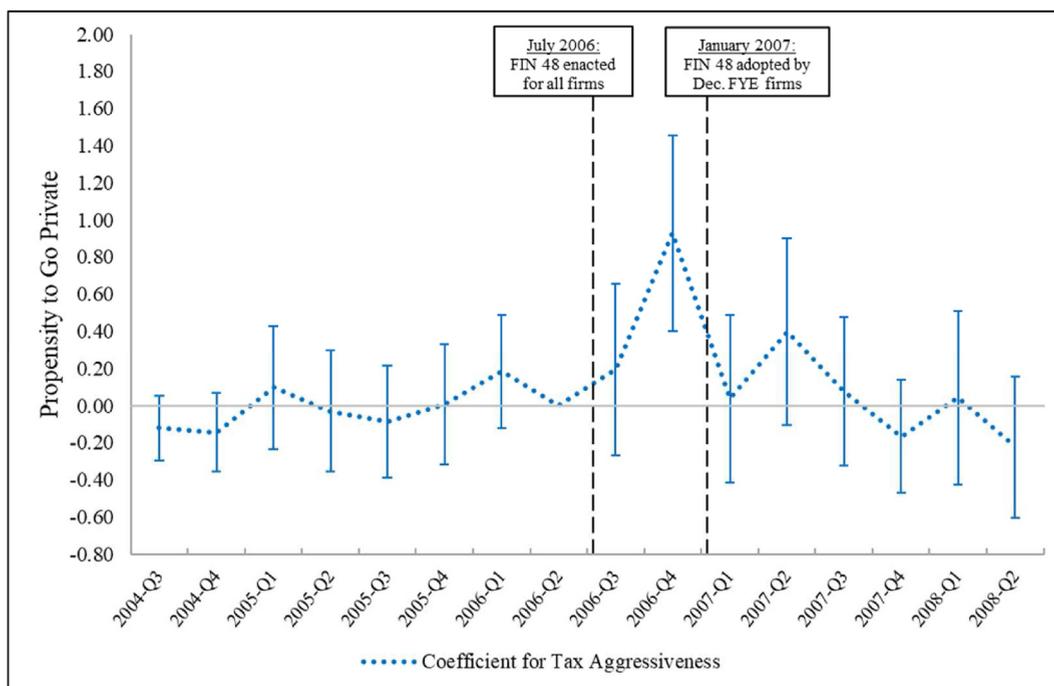
<sup>17</sup> The economic magnitude of the effect of a one standard deviation increase in *Tax Shelter Score* on *Go Private* between FIN 48 enactment and adoption can be computed as  $(0.515 \times 0.38) \div 0.36 = 54.4\%$ .

<sup>18</sup> Entropy balancing is similar in spirit to propensity score matching (PSM) but has the additional benefits of retaining all observations and matching on the mean, variance, and skewness (first, second, and third moments) instead of just the mean ([Hainmueller, 2012](#); [McMullin and Schonberger, 2020](#)). In untabulated analysis, I find my inferences are similar using PSM, although the PSM procedure does not obtain perfect covariate balance.

<sup>19</sup> [Table OA1 in the online appendix](#) shows that after entropy balancing, the mean and variance of the matching covariates are nearly identical for treatment and control firms across the three primary tax aggressiveness proxies.

<sup>20</sup> The coefficients on *FIN48* are different in Panels A and B because Panel A features a continuous *Tax Aggressive* variable (with the tax aggressiveness proxies centered around zero), whereas Panel B features a dichotomous *High Tax Aggressive* variable. Hence, the significantly positive coefficient on *FIN48* in Panel A denotes an increased going-private propensity for the median tax aggressive firm, whereas the insignificant coefficient on *FIN48* in Panel B indicates no change in going-private propensity among firms with below-median values for tax aggressiveness.

<sup>21</sup> [Table OA2 in the online appendix](#) tabulates the quarter-by-quarter analyses for the three primary tax aggressiveness proxies and shows that the findings are similar for all three proxies.



**Fig. 2.** Tax aggressive firms' propensity to go private by quarter. This figure provides a visual representation of the effect of a firm's tax aggressiveness on the propensity to announce a going-private transaction in each quarter during the four-year period 2004Q3 to 2008Q2. The x-axis represents time by calendar quarter and the y-axis represents the effect of tax aggressiveness (using the *Tax Shelter Score* proxy) on the propensity to go private during any given quarter. A version of Eq. (1) is estimated but the *FIN48* indicator variable has been replaced by separate indicator variables for each quarter from 2004Q3 to 2008Q2. The coefficients are plotted along with a 95% confidence interval, calculated based on standard errors clustered at the firm level. Note that 2006Q2 has a coefficient of zero and no confidence interval because it serves as the benchmark period. The coefficients capture the effect of a firm's tax aggressiveness on its propensity to announce a going-private transaction on a quarter-by-quarter basis.

private trends outside of the shock to tax-based proprietary costs imposed by FIN 48, assuaging concerns that the findings in Table 3 are due to different financing needs for tax aggressive and non-tax aggressive firms.

#### 4.4. Cross-sectional analysis: multinational firms and CIC firms

To strengthen my inference that tax aggressive firms go private in response to tax-based proprietary costs, I next examine two sources of heterogeneity in FIN 48's impact on firms. First, I examine the effect of FIN 48 on firms with primarily domestic operations versus those with extensive foreign operations. FIN 48 disclosures are likely to be less informative to the IRS for firms with considerable foreign operations because reserves for uncertain tax positions in multiple jurisdictions are combined in the FIN 48 disclosure. Consequently, I expect that firms with extensive foreign operations are less likely to respond to FIN 48 by going private.

Firms are classified as multinationals with significant foreign operations (MNEs) if greater than 25% of their total sales come from foreign jurisdictions, and otherwise as primarily domestic (Domestic).<sup>22</sup> I estimate Eq. (1) for both groups and show the results in Table 4 Panel A. Columns 1 and 2 reveal that the coefficient on  $FIN48 \times Tax\ Shelter\ Score$  is significantly positive for Domestic firms (coef. = 0.751; t-stat. = 2.93), but insignificantly different from zero for MNE firms (coef. = -0.087; t-stat. = -0.23). An F-test shows the difference between the two coefficients is significant ( $p$ -value = 0.03). Columns 3–6 reveal a similar pattern for *BTD Factor* and *Cash Tax Diff* (although the difference between coefficients is insignificant for the *Cash Tax Diff* proxy). The findings suggest that domestic firms view the FIN 48 disclosures as more costly because they provide a stronger signal to the IRS about uncertain tax positions within U.S. jurisdiction.<sup>23</sup>

<sup>22</sup> Although the 25% cutoff is necessarily ad hoc, it is based on the principle that a firm's foreign operations must be extensive enough to obscure the usefulness of the FIN 48 disclosures to the tax authority. In untabulated analyses, I find the results are robust to several alternative definitions of MNEs, including: (1) having foreign sales greater than 15% or 30% of total sales, (2) having positive foreign pretax income or nonzero foreign tax expense, and (3) disclosing at least one subsidiary in a foreign country in Exhibit 21 of Form 10-K (Dyreng et al., 2017).

<sup>23</sup> To the extent firms are concerned about state tax authorities using FIN 48 disclosures to improve enforcement (e.g., Gupta et al., 2014), one can argue that FIN 48 disclosures are less informative when firms have operations in multiple states compared to firms based in one state. Using Exhibit 21 data obtained from Scott Dyreng's website to identify firms with subsidiaries in multiple states (Dyreng et al., 2013; Holt et al., 2022), I find the going-private response to FIN 48 is more pronounced for firms with operations in just one state than for firms with subsidiaries in multiple states.

**Table 4**  
Heterogeneity in the effect of FIN 48 on tax aggressive firms' propensity to go private.

Panel A: Domestic versus multinational firms							
Dependent variable:		Go Private					
Tax aggressiveness proxy:		Tax Shelter Score		BTD Factor		Cash Tax Diff	
Firm type:	Pr. sign	Domestic	MNE	Domestic	MNE	Domestic	MNE
<b>FIN 48 × Tax Aggressive</b>	<b>+,0</b>	<b>0.751***</b> (2.93)	<b>-0.087</b> (-0.23)	<b>0.464***</b> (2.96)	<b>-0.341</b> (-0.68)	<b>1.819***</b> (2.98)	<b>-0.306</b> (-0.12)
FIN 48		0.477 (1.62)	0.676* (1.88)	0.463 (1.58)	0.646* (1.91)	0.447 (1.53)	0.656* (1.92)
Tax Aggressive		0.025 (0.21)	0.059 (0.32)	0.174** (2.42)	-0.070 (-0.40)	0.404 (1.35)	0.586 (0.71)
p-value for difference in coefficients		0.03		0.03		0.20	
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes	Yes	Yes	Yes
S.E. clustered by firm		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		43,328	17,162	43,328	17,162	43,328	17,162
No. of going-private events		176	44	176	44	176	44
R-Squared		0.53%	0.65%	0.52%	0.65%	0.51%	0.65%
Panel B: Non-CIC versus CIC firms							
Dependent variable:		Go Private					
Tax aggressiveness proxy:		Tax Shelter Score		BTD Factor		Cash Tax Diff	
Firm type:	Pr. sign	Non-CIC	CIC	Non-CIC	CIC	Non-CIC	CIC
<b>FIN 48 × Tax Aggressive</b>	<b>+,0</b>	<b>0.664***</b> (2.89)	<b>0.216</b> (1.05)	<b>0.407**</b> (2.45)	<b>0.148</b> (0.71)	<b>1.806***</b> (2.71)	<b>0.591</b> (0.71)
FIN 48		0.514** (1.99)	0.366 (0.89)	0.523** (2.02)	0.430 (0.97)	0.515** (1.99)	0.427 (0.98)
Tax Aggressive		-0.056 (-0.52)	0.148 (0.82)	0.100 (1.28)	0.178* (1.70)	0.561 (1.61)	0.047 (0.12)
p-value for difference in coefficients		0.06		0.07		0.04	
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes	Yes	Yes	Yes
S.E. clustered by firm		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		50,015	10,475	50,015	10,475	50,015	10,475
No. of going-private events		200	20	200	20	200	20
R-Squared		0.47%	1.30%	0.46%	1.30%	0.46%	1.29%

This table presents results of two cross-sectional tests examining the propensity of tax aggressive firms to announce a going-private transaction around the enactment of FIN 48. In Panel A, firms are designated as multinationals with significant foreign operations (MNE) if greater than 25% of their total sales come from foreign sources, otherwise they are designated as primarily domestic firms (Domestic). In Panel B, firms are designated as belonging to the IRS CIC program if they are among the 1,000 firms with the highest CIC prediction score (CIC), otherwise they are designated as not belonging to the CIC program (Non-CIC). In both panels, the sample consists of firm-quarter observations during calendar quarters 2005Q1 to 2008Q2. The dependent variable equals one if the firm announces a going-private transaction during the quarter (multiplied by 100 to ease interpretation of the coefficients), and zero otherwise. Columns 1–2 (3–4, 5–6) show the results using Tax Shelter Score (BTD Factor, Cash Tax Diff), measured as of the fiscal year-end prior to FIN 48 enactment. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by firm. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

As a second test of heterogeneity in the effect of FIN 48 on tax aggressive firms, I examine the impact of belonging to the IRS's Coordinated Industry Case (CIC) program. Ayers et al. (2019) and Internal Revenue Manual 4.46.2.5 explain that certain firms are assigned to the CIC program where the probability of audit examination is 100 percent. Since CIC firms are already under continuous audit, FIN 48 disclosures are less likely to play a role in attracting unwanted IRS scrutiny, and thus CIC firms should be less likely to go private in response to FIN 48.

To test my prediction, I estimate Eq. (1) for CIC and non-CIC firms and present the results in Table 4 Panel B. Because CIC program assignment is confidential, I use Ayers et al.'s (2019) prediction model to designate the 1,000 firms with the highest scores as CIC firms.<sup>24</sup> Columns 1–2 show the coefficient on  $FIN48 \times Tax\ Shelter\ Score$  is significantly positive for non-CIC firms (coef. = 0.664; t-stat. = 2.89), but insignificantly different from zero for CIC firms (coef. = 0.216; t-stat. = 1.05). An F-test finds the difference between the two coefficients is significant ( $p$ -value = 0.06). Columns 3–6 reveal a similar pattern for the BTD Factor and Cash Tax Diff proxies.

<sup>24</sup> The results are similar if I instead identify CIC firms as those with a greater than 50% likelihood of belonging to the program according to the Ayers et al. (2019) prediction model (e.g., De Simone et al., 2020).

**Table 5**  
Tax aggressive firms' propensity to go private around FIN 48 enactment: Transaction types.

Panel A: Private equity and management-involved buyouts				
Dependent variable:		Go Private - PE & Mgmt		
Tax aggressiveness proxy:	Pr. sign	Tax Shelter Score	BTD Factor	Cash Tax Diff
<b>FIN 48 × Tax Aggressive</b>	+	<b>0.453***</b> (3.44)	<b>0.372***</b> (4.10)	<b>1.590***</b> (3.55)
FIN 48		0.425** (2.29)	0.458** (2.44)	0.449** (2.42)
Tax Aggressive		0.016 (0.23)	0.029 (0.70)	0.098 (0.72)
Controls		Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes
S.E. clustered by firm		Yes	Yes	Yes
No. of observations		60,490	60,490	60,490
No. of going-private events		147	147	147
R-Squared		0.48%	0.47%	0.47%
Panel B: Third-party operating firms				
Dependent variable:		Go Private - Operating		
Tax aggressiveness proxy:	Pr. sign	Tax Shelter Score	BTD Factor	Cash Tax Diff
<b>FIN 48 × Tax Aggressive</b>	+/0	<b>0.056</b> (0.62)	<b>0.003</b> (0.04)	<b>0.049</b> (0.16)
FIN 48		0.056 (0.44)	0.056 (0.44)	0.057 (0.45)
Tax Aggressive		0.006 (0.10)	0.093** (2.09)	0.385* (1.93)
Controls		Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes
S.E. clustered by firm		Yes	Yes	Yes
No. of observations		60,490	60,490	60,490
No. of going-private events		73	73	73
R-Squared		0.20%	0.20%	0.20%

This table presents results examining the propensity of tax aggressive firms to announce a going-private transaction around the enactment of FIN 48, by transaction type. In Panel A, the dependent variable equals one if the firm announces a going-private transaction involving a private equity buyer during the quarter (multiplied by 100 to ease interpretation of the coefficients), and zero otherwise. In Panel B, the dependent variable equals one if the firm announces a going-private transaction via acquisition by a third-party private operating firm during the quarter (multiplied by 100 to ease interpretation of the coefficients), and zero otherwise. In both panels, the sample consists of firm-quarter observations during calendar quarters 2005Q1 to 2008Q2. Column 1 (2, 3) shows the results using Tax Shelter Score (BTD Factor, Cash Tax Diff), measured as of the fiscal year-end prior to FIN 48 enactment. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by firm. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

The findings in Table 4 indicate that the tax aggressive firms most likely to go private in response to FIN 48 are those with primarily domestic operations and those that do not belong to the CIC program (that is, firms likely to face higher tax-based proprietary costs due to FIN 48). These findings support my interpretation that tax-based proprietary costs imposed by FIN 48 enactment caused public, tax aggressive firms to go private.

#### 4.5. Types of going-private transactions between FIN 48 enactment and adoption

Sample firms go private through different types of transactions, including private equity-led buyouts and buyouts by private third-party operating firms. In this section, I investigate whether the FIN 48-induced increase in going-private transactions reflect one or both transaction types. To do so, I estimate Eq. (1) while separately examining private equity-led buyouts (*Go Private - PE & Mgmt*) and buyouts by private operating firms (*Go Private - Operating*).

Table 5 Panel A shows the results for private equity buyouts. In column 1, a significantly positive coefficient on *FIN48 × Tax Shelter Score* (coef. = 0.453; t-stat. = 3.44) denotes an increased propensity to go private via a transaction with a private equity buyer among tax aggressive firms between FIN 48 enactment and adoption, compared with non-tax aggressive firms. Columns 2–3 show similar findings when employing the *BTD Factor* and *Cash Tax Diff* proxies. Economically, a one standard deviation increase in *Tax Shelter Score* (*BTD Factor*, *Cash Tax Diff*) yields a relative increase of 71.7% (48.1%, 39.8%) in the propensity to announce a going-private transaction with a private equity buyer between FIN 48 enactment and adoption.

Table 5 Panel B presents the results examining the propensity to go private via an acquisition by a private operating firm. Columns 1–3 all show statistically insignificant coefficients on  $FIN48 \times Tax\ Aggressive$ , indicating no increase in going-private transactions among tax aggressive firms via buyouts by private operating firms in response to the enactment of FIN 48.<sup>25</sup>

Taken together, the results in Table 5 Panels A and B suggest my main findings are driven by increased private equity buyouts of tax aggressive targets between FIN 48 enactment and adoption. This evidence accords with the discussion in Section 2.3 on the advantages of private equity buyouts for firms seeking to go private; private equity buyers offer the advantages of speed, a greater certainty of deal completion, and a willingness to retain incumbent management.

#### 4.6. FIN 48: tax-based proprietary costs versus changes in measurement and recognition

A potential concern with the FIN 48 setting is that the new guidance mandated changes not only in disclosures, but also in the measurement and recognition of liabilities related to tax uncertainty. Thus, at first glance it may seem plausible that firms chose to go private not because of tax-based proprietary costs, but rather because they anticipated that FIN 48 would cause them to report lower earnings or higher liabilities in their financial statements, potentially hindering their ability to raise capital. However, an important feature of FIN 48 is that it ultimately applied to both public and private firms.<sup>26</sup> Therefore, firms choosing to go private in response to FIN 48 would nevertheless have anticipated applying the new standard for measurement and recognition. Consequently, the primary benefit of going private in response to FIN 48 is to avoid publicly disclosing information for the tax authority to observe. This feature of the FIN 48 setting allows me to more confidently (albeit not perfectly) attribute my findings to tax-based proprietary costs.

## 5. Additional analyses

### 5.1. Speed of response to FIN 48 by December FYE firms versus non-December FYE firms

To better attribute my main findings to tax-based proprietary costs, I exploit the feature that the first required FIN 48 disclosures occurred earlier for some firms than for others. Firms with December fiscal year-ends (FYE) were first required to make FIN 48 disclosures for the quarter ending in March 2007, whereas firms with non-December FYEs had a longer window before required FIN 48 compliance. This feature is relevant because conducting a thorough search for prospective buyers and reaching an agreement can be a time-consuming process, as illustrated in the anecdote about Sabre Holdings. Since December FYE firms faced more time pressure in responding to FIN 48, I expect these firms to exhibit an earlier increase in going-private propensity compared to non-December FYE firms.

To test my prediction, I examine firms with December and non-December (“Other”) FYEs separately, and estimate a modified Eq. (1) in which  $FIN48$  is replaced with indicator variables partitioning the overall sample window into four sub-periods.<sup>27</sup> Table 6 displays the results, with columns 1, 3, and 5 (2, 4, and 6) showing the results for firms with December (Other) FYEs.<sup>28</sup> In column 1, the coefficient on  $2006Q3-2006Q4 \times Tax\ Shelter\ Score$  is significantly positive (coef. = 0.608; t-stat. = 2.73) whereas the coefficient on  $2007Q1-2007Q2 \times Tax\ Shelter\ Score$  is insignificant (coef. = 0.239; t-stat. = 1.31), indicating the spike in going-private announcements by tax aggressive firms with December FYEs subsides by early 2007. In column 2, the coefficient on  $2006Q3-2006Q4 \times Tax\ Shelter\ Score$  is insignificant (coef. = -0.236; t-stat. = -1.29) whereas the coefficient on  $2007Q1-2007Q2 \times Tax\ Shelter\ Score$  is significantly positive (coef. = 0.509; t-stat. = 1.68). The result implies that tax aggressive firms with non-December FYEs do not exhibit an increase in going-private announcements until early 2007. Columns 3–6 reveal a similar pattern for the other tax aggressiveness proxies. The results are consistent with tax aggressive December FYE firms reacting quickly by preemptively going private before FIN 48 takes effect, whereas tax aggressive firms with non-December FYEs respond with less urgency.

The findings in Table 6 support the interpretation that firms are responding to the tax-based proprietary costs in FIN 48, and raise the bar for alternative explanations. Any alternative story must account not only for why tax aggressive firms exhibit an increased propensity to go private specifically between FIN 48 enactment and adoption, but must also explain the differential timing of going-private decisions for tax aggressive firms with December FYEs and tax aggressive firms with other FYEs. The finding further reduces endogeneity concerns such as a confounding event (e.g., a private equity wave) potentially clouding my inferences.

<sup>25</sup> In untabulated analysis, I find that the differences between the coefficients on  $FIN48 \times Tax\ Aggressive$  for *Go Private - PE & Mgmt* (Panel A) and *Go Private - Operating* (Panel B) are statistically significant across all three tax aggressiveness proxies.

<sup>26</sup> The FASB originally intended to make FIN 48 effective for public and private firms at the same time. However, in February 2007 the Private Company Financial Reporting Committee (PCFRC) raised concerns regarding the effective date for private companies, and the FASB subsequently delayed the application of FIN 48 for private companies until fiscal years beginning after Dec. 15, 2008 (Stromsem, 2009). However, at the time of my focus (late 2006 and early 2007), both public and private firms anticipated beginning compliance with FIN 48 in 2007.

<sup>27</sup> Motivated by the finding in Section 4.5 that the FIN 48-led spike in going-private transactions was driven by private equity buyouts, I focus specifically on transactions involving a private equity buyer. In untabulated analyses, I find that the results examining all going-private transactions are similar.

<sup>28</sup> Note that the main coefficient on  $Tax\ Aggressive$  drops out in the Table 6 specification due to the inclusion of the full set of time period interactions with  $Tax\ Aggressive$  (i.e., covering 2005Q1 to 2008Q2).

**Table 6**  
Speed of response to FIN 48 by firms with December FYEs versus firms with other FYEs.

Dependent variable:		Go Private - PE & Mgmt					
Tax aggressiveness proxy:		Tax Shelter Score		BTD Factor		Cash Tax Diff	
Fiscal year-end:	Pr. sign	December	Other	December	Other	December	Other
2005Q1 - 2006Q2 × Tax Aggressive		0.080 (0.86)	0.062 (0.30)	0.066 (0.96)	-0.111 (-0.89)	0.318 (1.08)	0.156 (0.43)
<b>2006Q3 - 2006Q4 × Tax Aggressive</b>	<b>+0</b>	<b>0.608***</b> <b>(2.73)</b>	-0.236 (-1.29)	<b>0.528***</b> <b>(3.95)</b>	0.004 (0.03)	<b>2.027***</b> <b>(2.99)</b>	0.273 (0.52)
<b>2007Q1 - 2007Q2 × Tax Aggressive</b>	<b>0,+</b>	0.239 (1.31)	<b>0.509*</b> <b>(1.68)</b>	0.153 (1.37)	<b>0.323**</b> <b>(2.22)</b>	0.610 (1.38)	<b>1.767**</b> <b>(2.04)</b>
2007Q3 - 2008Q2 × Tax Aggressive		0.037 (0.29)	-0.418* (-1.80)	0.029 (0.21)	0.006 (0.06)	-0.350 (-1.10)	-0.141 (-0.23)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes	Yes	Yes	Yes
S.E. clustered by firm		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		40,311	20,179	40,311	20,179	40,311	20,179
No. of going-private events		97	50	97	50	97	50
R-Squared		0.57%	0.76%	0.56%	0.72%	0.55%	0.72%

This table presents results examining the propensity of tax aggressive firms to announce a going-private transaction around the enactment of FIN 48 for firms with December fiscal year-ends and firms with non-December (Other) fiscal year-ends. The sample consists of firm-quarter observations during calendar quarters 2005Q1 to 2008Q2. The dependent variable equals one if the firm announces a going-private transaction involving a private equity buyer during the quarter (multiplied by 100 to ease interpretation of the coefficients), and zero otherwise. The variable 2005Q1 - 2006Q2 (2006Q3 - 2006Q4, 2007Q1 - 2007Q2, 2007Q3 - 2008Q2) is an indicator variable equal to one for calendar quarters 2005Q1-2006Q2 (2006Q3-Q4, 2007Q1-Q2, 2007Q3-2008Q2), and zero otherwise. Columns 1–2 (3–4, 5–6) show the results using Tax Shelter Score (BTD Factor, Cash Tax Diff), measured as of the fiscal year-end prior to FIN 48 enactment. Columns 1, 3, and 5 (2, 4, and 6) show the results for firms with December (non-December, or 'Other') fiscal year-ends. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by firm. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

## 5.2. IRS scrutiny of tax aggressive firms following FIN 48

An implicit assumption is that firms expected the FIN 48 disclosures to lead to increased scrutiny of taxpayers with weaker underlying positions. Although this assumption is supported by anecdotal evidence, it is worth examining whether the availability of the FIN 48 disclosures did, in fact, affect IRS scrutiny for tax aggressive firms. I proxy for IRS scrutiny using IRS downloads of firms' 10-K and 10-Q filings during 2004–2008 (Bozanic et al., 2017). I then estimate a modified Eq. (1) where *FIN48* is replaced with yearly indicator variables interacted with tax aggressiveness proxies (with 2004 serving as the base year). Table 7 presents the results of the estimation.

Column 1 shows that IRS downloads in years 2005–2006 were not statistically different for tax aggressive and non-tax aggressive firms, where tax aggressiveness is proxied by *Tax Shelter Score*. However, the coefficients on *Yr 2007 × Tax Shelter Score* and *Yr 2008 × Tax Shelter Score* are significantly positive (coef. = 0.089; t-stat. = 4.50 and coef. = 0.218; t-stat. = 11.79 for years 2007 and 2008, respectively), revealing a considerable increase in IRS downloads of tax aggressive firms' 10-Q and 10-K filings following FIN 48 adoption. Columns 2 and 3 show similar results when using the *BTD Factor* and *Cash Tax Diff* proxies.

Fig. 3 illustrates the change in IRS quarterly downloads of tax aggressive firms' 10-K and 10-Q filings from 2004 to 2008. The figure plots the coefficients from a modified Eq. (1) where *FIN48* is replaced by quarterly indicators.<sup>29</sup> Aside from the quarters with missing data, the coefficients are insignificantly different from zero from 2004Q1-2007Q1, revealing no difference between IRS downloads of tax aggressive and non-tax aggressive firms' SEC filings in the pre-FIN 48 era. Beginning in 2007, however, there is a dramatic rise in IRS downloads of tax aggressive firms' filings, and the increase continues into 2008 as firms' financial statements begin to include FIN 48 disclosures. Overall, the results in Table 7 and Fig. 3 indicate a substantial increase in IRS scrutiny of tax aggressive firms' financial statements as they implement the FIN 48 disclosures revealing the uncertainty of their underlying tax positions.

## 5.3. Robustness tests

### 5.3.1. Alternative tax aggressiveness proxies

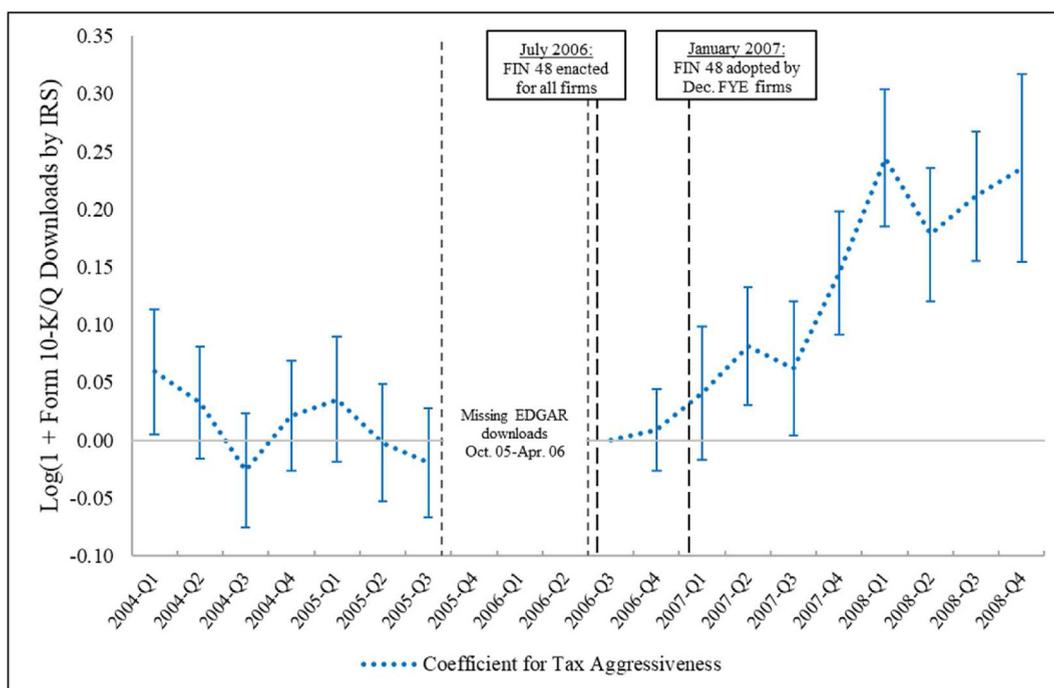
In additional analysis contained in Table OA3 of the online appendix, I show the results of estimating Eq. (1) using four alternative proxies for tax aggressiveness, including: industry- and size-adjusted three-year GAAP and cash effective tax rates

<sup>29</sup> Coefficients are omitted for the quarters 2005Q4-2006Q2 because the EDGAR log file datasets are sparsely populated during this time. The SEC has attributed this gap to SEC traffic being routed to internal servers during some time periods (Stice-Lawrence, 2021). (<https://www.sec.gov/edgar-log-file-data-set-FAQs>).

**Table 7**  
IRS scrutiny of tax aggressive firms following FIN 48 adoption.

Dependent variable:		Log(IRS 10-K/Q Downloads)		
Tax aggressiveness proxy:	Pr. sign	Tax Shelter Score	BTD Factor	Cash Tax Diff
<i>Yr 2005 × Tax Aggressive</i>	0	-0.043 (-1.02)	-0.019 (-0.80)	-0.083 (-0.81)
<i>Yr 2006 × Tax Aggressive</i>	0	-0.063 (-1.55)	-0.029 (-1.22)	-0.111 (-1.08)
<b><i>Yr 2007 × Tax Aggressive</i></b>	+	<b>0.089***</b> <b>(4.50)</b>	<b>0.052***</b> <b>(4.51)</b>	<b>0.245***</b> <b>(3.69)</b>
<b><i>Yr 2008 × Tax Aggressive</i></b>	+	<b>0.218***</b> <b>(11.79)</b>	<b>0.125***</b> <b>(10.38)</b>	<b>0.617***</b> <b>(10.39)</b>
<i>Tax Aggressive</i>		-0.008 (-0.34)	-0.015 (-1.11)	-0.222** (-2.71)
Controls		Yes	Yes	Yes
Year-Qtr FE		Yes	Yes	Yes
Industry FE (SIC 2-digit)		Yes	Yes	Yes
S.E. clustered by firm & year-qtr		Yes	Yes	Yes
No. of observations		86,081	86,081	86,081
R-Squared		18.93%	18.09%	18.07%

This table presents results examining IRS downloads of tax aggressive firms' 10-K and 10-Q filings around the enactment of FIN 48. The sample consists of calendar firm-quarter observations from 2004Q1 to 2008Q4. The dependent variable is the natural log of one plus the number of downloads of a firm's 10-K and 10-Q filings during a quarter by the IRS. Yr 2005 (Yr 2006, Yr 2007, Yr 2008) is an indicator variable equal to one if the quarter falls in calendar year 2005 (2006, 2007, 2008), and zero otherwise. Column 1 (2, 3) shows the results using Tax Shelter Score (BTD Factor, Cash Tax Diff), measured as of the fiscal year-end prior to FIN 48 enactment. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by firm and year-quarter. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.



**Fig. 3.** IRS scrutiny of tax aggressive firms by quarter. This figure provides a visual representation of quarterly IRS downloads of tax aggressive firms' 10-K and 10-Q filings with the SEC during the five-year period 2004Q1 to 2008Q4. Note that quarters 2005Q4–2006Q2 are omitted because the EDGAR log file datasets are sparsely populated for most days during this time period (e.g., Stice-Lawrence 2020). The x-axis represents time by calendar quarter and the y-axis represents the relation between a firm's tax aggressiveness (using the *Tax Shelter Score* proxy) and IRS downloads during each quarter. A version of Eq. (1) is estimated but the dependent variable has been replaced by the natural log of one plus IRS downloads of the firm's financial statements and the *FIN48* indicator variable has been replaced by separate indicator variables for each calendar quarter from 2004Q1–2008Q4. The coefficients are plotted along with a 95% confidence interval, calculated based on standard errors clustered at the firm level. Note that 2006Q3 has a coefficient of zero and no confidence interval because it serves as the benchmark period. The coefficients capture the effect of a firm's tax aggressiveness on IRS downloads of firms' SEC filings on a quarter-by-quarter basis.

(Balakrishnan et al., 2019); an estimate of predicted UTBs (Rego and Wilson, 2012); and a practitioner-based proxy for tax risk (Neuman et al., 2020). All four alternative proxies indicate a robust relation between tax aggressiveness and going-private propensity between FIN 48 enactment and adoption.

### 5.3.2. Alternative windows around FIN 48

In Table OA4 of the online appendix, I estimate Eq. (1) employing two alternative sample periods: including shorter windows prior to FIN 48 enactment and following FIN 48 adoption (i.e., 2005Q3–2007Q4); and excluding the post-FIN 48 adoption period entirely. In both cases, the results are consistent with my main findings.

### 5.3.3. SOX 404 compliance among non-accelerated filers

A potentially confounding event is the expected compliance date with Section 404 of the Sarbanes-Oxley Act of 2002 (“SOX 404”) for small public companies (non-accelerated filers). The SEC repeatedly extended the SOX 404 compliance dates for small firms, and at one point they were to begin complying in the first fiscal year ending on or after July 15, 2006. Ultimately the SEC pushed back SOX 404 compliance for non-accelerated filers to fiscal years ending after December 15, 2007 (Albuquerque and Zhu, 2019), but a concern is whether firms decided to go private in the latter half of 2006 to avoid SOX 404 compliance rather than the FIN 48 disclosure requirements. I address this concern by estimating Eq. (1) after excluding firms with less than \$75 million in market capitalization – the upper limit for public firms to qualify for non-accelerated filer status. The results, shown in online appendix Table OA5, reveal that the main inferences are unchanged after dropping firms eligible to qualify for non-accelerated filer status.

### 5.3.4. Firm and time-varying industry fixed effects

In online appendix Table OA6, I estimate Eq. (1) after including firm fixed effects and industry-year-quarter fixed effects. In all cases, I find that the main inferences hold.

## 6. Secondary setting: IPOs of tax aggressive firms around FIN 48 and Schedule UTP

In this section, I extend the analysis of tax-based proprietary costs in two ways to broaden the findings and better understand their implications. First, I study whether FIN 48 discouraged some tax aggressive, private firms from going public. Second, I study whether the subsequent introduction of IRS Schedule UTP, which informs the agency about uncertain tax positions for all firms (public and private), mitigated FIN 48's tax-based proprietary costs for public firms.

### 6.1. Quarterly IPOs of tax aggressive firms following FIN 48

If tax-based proprietary costs from FIN 48 induced some public, tax aggressive firms to go private, a natural question is whether those same costs discouraged private, tax aggressive firms from going public. Empirically, the latter is a more difficult question to answer because I am unable to directly observe firms that opted to remain private due to FIN 48. Hence, my empirical approach is to examine the change in aggregate quarterly IPOs by tax aggressive firms before and after FIN 48 enactment, using the change in IPOs by non-tax aggressive firms as a benchmark. If FIN 48 deterred some private, tax aggressive firms from pursuing IPOs, I should observe a decline in IPOs by tax aggressive firms relative to non-tax aggressive firms following FIN 48 enactment.

I construct my sample of IPO filings using data from SDC Platinum and Jay Ritter's website for the eight quarters before and after FIN 48 enactment (2004Q3–2008Q2). I exclude financial industries, shell companies, limited partnerships, unit offerings, and IPOs raising less than \$5 million (Dambra et al., 2015). I also exclude IPO filings missing Compustat data needed to construct the tax aggressiveness proxies for the year ended prior to IPO filing.<sup>30</sup> These restrictions yield a sample of 505 IPO filings from July 1, 2004 to June 30, 2008. For each tax aggressiveness proxy, IPO firms are sorted into groups with high and low aggressiveness, using as a benchmark the median tax aggressiveness values of IPO firms before FIN 48 enactment. IPOs in each group are aggregated by calendar quarter, yielding quarterly IPOs of high- and low-tax aggressive firms. Using these samples of aggregate quarterly IPOs of high- and low-tax aggressive firms, I estimate the following linear probability model at the quarterly level:

$$\begin{aligned} \text{Quarterly IPO Frequency}_{j,t} = & \alpha + \beta_1 \text{Post FIN48}_t \times \text{High Tax Aggressive}_j + \beta_2 \text{Post FIN48}_t + \beta_3 \text{High Tax Aggressive}_j \\ & + \beta_k \text{Controls}_t + \epsilon_{j,t} \end{aligned} \quad (2)$$

In the equation above,  $j$  indexes the tax aggressiveness of the group of IPO firms, and  $t$  indexes calendar year-quarters. The dependent variable,  $\text{Quarterly IPO Frequency}_{j,t}$  is the number of IPO filings by firms in tax aggressiveness group  $j$  during quarter  $t$ , scaled by the number of publicly listed firms at the end of the quarter, multiplied by 100.  $\text{Post-FIN48}_t$  is an indicator variable

<sup>30</sup> Due to limitations of the data from IPO prospectuses, I employ modified versions of the tax aggressiveness proxies and a subset of the control variables from Eq. (1). Details of variable construction are provided in Appendix A.

**Table 8**  
Quarterly IPOs of tax aggressive firms after FIN 48 enactment.

Dependent variable: Tax aggressiveness proxy:	Pr. sign	Quarterly IPO Frequency					
		Tax Shelter Score <sub>IPO</sub>		BTD Factor <sub>IPO</sub>		Cash Tax Diff <sub>IPO</sub>	
<b>Post-FIN 48 × High Tax Aggressive</b>	—	<b>-0.053**</b>	<b>-0.053**</b>	<b>-0.094*</b>	<b>-0.094*</b>	<b>-0.057*</b>	<b>-0.057**</b>
		<b>(-2.40)</b>	<b>(-2.58)</b>	<b>(-1.85)</b>	<b>(-2.00)</b>	<b>(-2.10)</b>	<b>(-2.26)</b>
<i>High Tax Aggressive</i>		0.015	0.015	0.052	0.052	0.032	0.032
		(0.91)	(0.98)	(1.05)	(1.13)	(1.41)	(1.51)
<i>Post-FIN 48</i>		0.051		0.071		0.053	
		(0.64)		(0.78)		(1.24)	
<i>Market Ret 1 Yr</i>		-0.109		-0.109		-0.165	
		(-0.82)		(-0.82)		(-1.74)	
<i>Aggregate MTB</i>		0.321**		0.321**		0.251**	
		(2.72)		(2.72)		(2.42)	
<i>GDP Growth</i>		0.037		0.037		0.032	
		(0.65)		(0.65)		(1.22)	
Year-Qtr FE		No	Yes	No	Yes	No	Yes
No. of quarterly observations		32	32	32	32	32	32
No. of IPOs		505	505	505	505	325	325
R-Squared		33.15%	80.32%	31.46%	70.53%	43.28%	82.91%

This table presents results examining quarterly IPOs of tax aggressive firms around the enactment of FIN 48. The sample consists of quarterly IPOs by high- and low-tax aggressive firms during calendar quarters 2004Q3–2008Q2. The dependent variable equals the number of IPO filings by high- or low-tax aggressive firms in each quarter, scaled by the number of publicly listed firms (multiplied by 100 to ease interpretation of the coefficients). An IPO firm is classified as having high (low) tax aggressiveness for a given tax aggressiveness proxy if it has a value above (below) the median value of that proxy for IPO firms filing during the pre-FIN 48 period (calendar quarters 2004Q3–2006Q2). Post-FIN 48 is an indicator variable equal to one for calendar quarters 2006Q3–2008Q2, and zero otherwise. Columns 1–2 (3–4, 5–6) show the results using the Tax Shelter Score<sub>IPO</sub> (BTD Factor<sub>IPO</sub>, Cash Tax Diff<sub>IPO</sub>) proxy to sort firms into groups of high and low tax aggressiveness. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated using robust standard errors. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

equal to one if quarter  $t$  is 2006Q3 or later, and zero otherwise. *High Tax Aggressive <sub>$j$</sub>*  is an indicator variable equal to one (zero) for the group of IPO firms with tax aggressiveness values above (below) the median of pre-FIN 48 IPO firms. *Controls* represents a vector of macroeconomic development variables from Dambra et al. (2015). The coefficient on the term *Post-FIN48 × High Tax Aggressive* represents the change in the quarterly frequency of IPO filings by tax aggressive firms following FIN 48 enactment relative to non-tax aggressive firms. I predict that  $\beta_1 < 0$ , indicating that fewer tax aggressive firms go public following FIN 48 enactment, compared to non-tax aggressive firms.

The results from estimating Eq. (2) are displayed in Table 8. Column 1, employing *Tax Shelter Score<sub>IPO</sub>*, shows a significantly negative coefficient on *Post-FIN48 × High Tax Aggressive* (coef. =  $-0.053$ ; t-stat. =  $-2.40$ ), indicating fewer IPOs by tax aggressive firms following FIN 48 enactment, compared to non-tax aggressive firms. Column 2 shows similar results after including year-quarter fixed effects to control for unobservable time period effects on the overall IPO market. The results in columns 3–6 yield similar inferences for the *BTD Factor<sub>IPO</sub>* and *Cash Tax Diff<sub>IPO</sub>* proxies. Economically, the estimates indicate that FIN 48 enactment led to a 19.9%–32.9% decline in quarterly IPOs by tax aggressive firms compared to non-tax aggressive firms.<sup>31</sup> The decline corresponds to 3.5–6.3 fewer IPOs per quarter by tax aggressive firms, or approximately 28–50 fewer IPOs overall in the eight quarters following FIN 48 enactment.

## 6.2. Quarterly IPOs of tax aggressive firms following schedule UTP

As a second extension, I examine whether the introduction of IRS Schedule UTP mitigated the impact of FIN 48 on firms' IPO decisions. First announced in January 2010, Schedule UTP requires all firms (public and private) to disclose information to the IRS about their uncertain tax positions (IRS, 2010; Harvey, 2011). Thus, the introduction of Schedule UTP can be viewed as an event that lowers the tax-based proprietary costs imposed by FIN 48 on public firms, because after its implementation the IRS obtains similar information regardless of whether the firm is public or private.<sup>32</sup> Consistent with this view, Bozanic et al. (2017) find that IRS downloads of firms' public financial statements dropped considerably after firms began to report Schedule UTP information in their tax returns, suggesting that Schedule UTP supplanted the usefulness of public FIN 48 disclosures for the IRS. Consequently, I predict the introduction of Schedule UTP leads to an increase in IPOs of tax aggressive firms relative to non-tax aggressive firms.

<sup>31</sup> Using the *Tax Shelter Score<sub>IPO</sub>* proxy, the magnitude of the effect of FIN 48 on IPOs by tax aggressive firms is computed as  $(-0.053 \times (1 - 0)) \div 0.267 = 0.199$ , where 0.267 is the pre-FIN 48 mean of *Quarterly IPO Frequency*.

<sup>32</sup> Bozanic et al. (2017) articulate this argument as follows: "[Schedule UTP] required firms to privately report information similar to what was primarily only available publicly via the financial statements. As a result, the costs of the public financial disclosure will be reduced because the IRS already has the information in question through their new private disclosure" (p. 89).

**Table 9**  
Quarterly IPOs of tax aggressive firms after FIN 48 and Schedule UTP.

Dependent variable: Tax aggressiveness proxy:	Pr. sign	Quarterly IPO Frequency					
		Tax Shelter Score <sub>IPO</sub>		BTD Factor <sub>IPO</sub>		Cash Tax Diff <sub>IPO</sub>	
<b>Post-FIN 48 × High Tax Aggressive</b>	–	<b>–0.071*</b> (–1.76)	<b>–0.071*</b> (–1.86)	<b>–0.123**</b> (–2.26)	<b>–0.123**</b> (–2.38)	<b>–0.066**</b> (–2.33)	<b>–0.066**</b> (–2.45)
<b>Post-UTP × High Tax Aggressive</b>	+	<b>0.129***</b> (2.87)	<b>0.129***</b> (3.03)	<b>0.140***</b> (3.28)	<b>0.140***</b> (3.46)	<b>0.049*</b> (2.02)	<b>0.049**</b> (2.13)
High Tax Aggressive		0.015 (0.58)	0.015 (0.61)	0.052 (1.14)	0.052 (1.20)	0.032 (1.46)	0.032 (1.54)
Post-FIN 48		–0.004 (–0.08)		0.022 (0.50)		0.000 (0.01)	
Post-UTP		–0.113 (–1.66)		–0.118* (–1.88)		–0.054 (–1.18)	
Market Ret 1 Yr		0.135*** (3.89)		0.135*** (3.89)		0.117*** (3.51)	
Aggregate MTB		0.031 (0.47)		0.031 (0.47)		0.001 (0.02)	
GDP Growth		–0.013 (–1.23)		–0.013 (–1.23)		–0.011 (–1.16)	
Financial Crisis		–0.138*** (–2.92)		–0.139*** (–3.01)		–0.065 (–1.54)	
Financial Crisis × High Tax Aggressive		Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE		No	Yes	No	Yes	No	Yes
No. of quarterly observations		64	64	64	64	64	64
No. of IPOs		811	811	811	811	554	554
R-Squared		58.30%	84.93%	57.06%	82.46%	53.61%	88.78%

This table presents results examining quarterly IPOs of tax aggressive firms around the enactment of FIN 48 and the introduction of IRS Schedule UTP. The sample consists of quarterly IPOs by high- and low-tax aggressive firms during calendar quarters 2004Q3–2012Q2. The dependent variable equals the number of IPO filings by high- or low-tax aggressive firms in each quarter, scaled by the number of publicly listed firms (multiplied by 100 to ease interpretation of the coefficients). An IPO firm is classified as having high (low) tax aggressiveness for a given tax aggressiveness proxy if it has a value above (below) the median value of that proxy for IPO firms filing during the pre-FIN 48 period (calendar quarters 2004Q3–2006Q2). Post-FIN 48 is an indicator variable equal to one for calendar quarters 2006Q3 onward, and zero otherwise. Post-UTP is an indicator variable equal to one for calendar quarters 2010Q1 onward, and zero otherwise. Columns 1–2 (3–4, 5–6) show the results using the Tax Shelter Score<sub>IPO</sub> (BTD Factor<sub>IPO</sub>, Cash Tax Diff<sub>IPO</sub>) proxy to sort firms into groups of high and low tax aggressiveness. All variables are defined in Appendix A. The t-statistics are reported below coefficient estimates in parentheses and are calculated using robust standard errors. \*, \*\*, \*\*\* indicate statistics significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

I test my conjecture by extending the sample of quarterly IPOs, yielding 811 IPO filings from 2004Q3–2012Q2.<sup>33</sup> Using this extended sample, I estimate the following model:

$$\text{Quarterly IPO Frequency}_{j,t} = \alpha + \beta_1 \text{Post FIN48}_t \times \text{High Tax Aggressive}_j + \beta_2 \text{Post UTP}_t \times \text{High Tax Aggressive}_j + \beta_3 \text{Post FIN48}_t + \beta_4 \text{Post UTP}_t + \beta_5 \text{High Tax Aggressive}_j + \beta_k \text{Controls}_t + \varepsilon_{j,t} \quad (3)$$

Post-UTP<sub>t</sub> is an indicator variable equal to one if quarter *t* is 2010Q1 or later, and zero otherwise. The other variables are defined as in Eq. (2).<sup>34</sup> I predict  $\beta_2 > 0$ , denoting a larger increase in IPOs by tax aggressive firms after Schedule UTP's introduction, compared to non-tax aggressive firms.

The results from estimating Eq. (3) are shown in Table 9. Column 1 shows a significantly negative coefficient on Post-FIN48 × High Tax Aggressive (coef. = –0.071; t-stat. = –1.76), similar to Table 8. In contrast, the coefficient on Post-UTP × High Tax Aggressive (coef. = 0.129; t-stat. = 2.87) is significantly positive, denoting increased IPOs by private, tax aggressive firms following the introduction of Schedule UTP. Column 2 reveals a similar result after including year-quarter fixed effects to control for unobservable time period effects on the IPO market. Columns 3–6 yield similar findings with respect to the other tax aggressiveness proxies.

Viewed together, the findings in Tables 8 and 9 suggest that tax-based proprietary costs imposed by FIN 48 on public firms deterred some private, tax aggressive firms from going public, and that IRS Schedule UTP mitigated these costs for public firms by requiring all firms (public and private) to disclose similar information to the IRS. The implications dovetail with my main findings that some public, tax aggressive firms chose to go private in response to the anticipated tax-based proprietary

<sup>33</sup> The sample ends in the second quarter of 2012 to avoid confounding the results with the enactment of the Jumpstart Our Business Startups Act (JOBS Act) in April 2012, which led to increased IPO activity (Dambra et al., 2015).

<sup>34</sup> In addition to the controls included in Eq. (2), Eq. (3) also includes an indicator variable for the financial crisis period (Financial Crisis), equal to one for quarters 2008Q1–2009Q4, and zero otherwise.

costs arising from FIN 48. In addition to providing corroborating evidence that tax-based proprietary costs play a meaningful role in the decision to operate as a publicly listed firm, the two sets of findings together help to present a comprehensive picture of the overall economic impact of tax-related disclosures on the public-private operating choice.

## 7. Conclusion

This study investigates whether tax-based proprietary costs discourage firms from listing publicly. In the main analysis, I investigate whether the enactment of a disclosure mandate (FIN 48) which had the effect of revealing the weakness of public taxpayers' underlying tax positions drove some firms to go private. Employing a difference-in-differences methodology and using the surrounding quarters as a benchmark, I find that tax aggressive firms exhibit an increased propensity to go private between FIN 48 enactment and adoption, compared to non-tax aggressive firms. Supporting tests imply the response can be attributed to tax-based proprietary costs of public disclosure. In a secondary analysis, I find a relative decline in IPOs by tax aggressive firms following FIN 48 enactment, consistent with tax-based proprietary costs deterring private, tax aggressive firms from going public. Last, I find the subsequent introduction of IRS Schedule UTP, which mitigated the costs of FIN 48 for public firms by requiring all firms (public and private) to disclose similar information, led to increased IPOs by private, tax aggressive firms.

My findings, however, should be interpreted with a few caveats in mind. First, while my results are consistent with firms responding to an anticipated increase in scrutiny by the tax authority, it is possible that firms are responding, at least in part, to perceived reputational costs arising from the disclosure of aggressive tax positions to other audiences such as the media, investors, and customers. Second, while the results from the IPO analysis are consistent with FIN 48 discouraging private, tax aggressive firms from going public, an ideal test would entail being able to directly observe private, tax aggressive firms that refrained from going public. Third, although my findings point to a specific cost imposed by FIN 48 on firms and investors, they do not comprehensively answer the question of whether the regulation was a net positive or negative development for capital markets.

In sum, my findings suggest that tax-based proprietary costs imposed by mandatory disclosure regulation can affect firms' willingness to list publicly. In light of the downward trend in the number of U.S. publicly listed firms over recent years, it is particularly important to understand the factors influencing the decision to operate as a public or private firm. As a final thought, although I focus specifically on tax-related disclosures, it is likely that other types of mandatory disclosures giving rise to proprietary costs (e.g., disclosure of potential losses related to litigation) impact the public listing decision. I leave these topics for future research.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jacceco.2022.101553>.

## Appendix A

### Variable definitions

This table provides a detailed description of the procedures used to compute each variable used in the analyses. The data are obtained through Compustat, CRSP, SDC Platinum, Thomson Reuters, and SEC filings from EDGAR. All continuous variables are winsorized at the 1st and 99th percentiles.

Primary dependent variables:

Variable	Definition
<i>Go Private</i>	Indicator variable equal to one if a public announcement is made during the quarter that the firm is going to be acquired by a private acquirer, and zero otherwise. Acquirers are classified as private according to SDC Platinum, and transactions due to bankruptcy or debt restructuring of the target firm are excluded. In addition, the firm must subsequently delist according to CRSP and file a Form 15 or 25 with the SEC in order for <i>Go Private</i> to be equal to one. Multiplied by 100 to ease interpretation of the coefficients.
<i>Go Private - PE &amp; Mgmt</i>	Indicator variable equal to one if <i>Go Private</i> is equal to one and either a) one or more private equity investment firms are involved in the transaction, or b) the target firm's management is involved in the buyout, and zero otherwise. The determination of private equity or management involvement in the deal is made based on the synopsis provided in SDC Platinum, or by manual inspection of the relevant SEC filings, if SDC does not contain information on the details of the transaction. Multiplied by 100 to ease interpretation of the coefficients.
<i>Go Private - Operating</i>	Indicator variable equal to one if <i>Go Private</i> is equal to one and the acquirer is a third-party private operating firm. The determination of whether the acquirer is a private operating firm is made based on the synopsis provided in SDC Platinum, or by manual inspection of the relevant SEC filings, if SDC does not contain information on the details of the transaction. Multiplied by 100 to ease interpretation of the coefficients.

(continued)

Variable	Definition
<i>Log(IRS 10-K/Q Downloads)</i>	Natural log of one plus the number of times during a quarter that an individual with an IRS IP address downloaded a 10-K or 10-Q filing from EDGAR for the firm. The procedure to obtain IRS downloads is described in <a href="#">Bozanic et al. (2017)</a> .

Primary tax aggressiveness variables:

Variable	Definition
<i>Tax Shelter Score</i>	The firm's estimated sheltering probability, based on <a href="#">Wilson's (2009)</a> model: $PredictedValue = -4.86 + 5.20 \times BTD + 4.08 \times  DAP  - 1.41 \times LEV + 0.76 \times AT + 3.51 \times ROA + 1.72 \times FOREIGN\ INCOME + 2.43 \times R\&D$ . where <i>BTD</i> is the total book-tax difference, as defined below; <i> DAP </i> is the absolute value of discretionary accruals from the performance-adjusted modified cross-sectional Jones model; <i>LEV</i> is long-term debt divided by total assets; <i>AT</i> is the natural log of total assets; <i>ROA</i> is the firm's pre-tax income divided by total assets; <i>FOREIGN INCOME</i> is an indicator variable set equal to one for firm-year observations reporting foreign income, and zero otherwise; and <i>R&amp;D</i> is R&D expense divided by lagged total assets. Each firm-year's <i>PredictedValue</i> estimate is used to calculate the predicted probability of tax sheltering ( <i>Tax Shelter Score</i> ) as follows: $Tax\ Shelter\ Score = \frac{e^{(PredictedValue)}}{1 + e^{(PredictedValue)}}$
<i>BTD Factor</i>	Extracted using factor analysis from the following three book-tax difference measures: <i>Total BTD</i> : Total book-tax difference, computed as pre-tax income less taxable income scaled by lagged total assets. Taxable income is computed as the sum of current federal tax expense and current foreign tax expense divided by the statutory tax rate, less the change in net operating loss carryforwards. If current federal tax expense is missing, total current tax expense is computed as total income tax expense less deferred tax expense, state income tax expense, and other income tax expense. <i>Abnormal BTD</i> : <a href="#">Desai and Dharmapala (2006)</a> residual book-tax difference, computed as the residual from the following firm fixed effects regression: $BTD_{it} = \beta_1 TACC_{it} + \mu_i + \varepsilon_{it}$ , where <i>BTD</i> is the total book-tax difference and <i>TACC</i> is total accruals measured using the cash flow method of <a href="#">Hribar and Collins (2002)</a> . Both variables are scaled by lagged total assets and are winsorized at the 1% and 99% levels for regression purposes. <i>ETR Differential</i> : Based on <a href="#">Frank et al. (2009)</a> and computed as $BI - \left(\frac{CFTE + CFOR}{STR}\right) - \left(\frac{DTE}{STR}\right)$ , scaled by lagged total assets. <i>BI</i> is pre-tax book income; <i>CFTE</i> is current federal tax expense; <i>CFOR</i> is current foreign tax expense; <i>DTE</i> is deferred tax expense; and <i>STR</i> is the statutory corporate tax rate.
<i>Cash Tax Diff</i>	Following <a href="#">Henry and Sansing (2018)</a> , the difference between cash taxes paid and the product of pretax income and the statutory tax rate, scaled by the lagged market value of assets. The market value of assets is calculated as the sum of the firm's book value of assets and market value of equity, less the firm's book value of equity. Multiplied by negative one such that higher values of <i>Cash Tax Diff</i> reflect more aggressive tax avoidance.

Primary control variables:

Variable	Definition
<i>FIN 48</i>	Indicator variable equal to one for the calendar quarters between FIN 48 enactment and adoption, and zero otherwise. For firms with December FYEs, it is set equal to one for the calendar quarters 2006Q3-Q4, and zero otherwise. For firms with FYEs in January–May (June–September, October–November) it is set equal to one for the calendar quarters 2006Q3-2007Q1 (2006Q3-2007Q2, 2006Q3-2007Q3), and zero otherwise.
<i>Size</i>	Natural log of one plus the firm's market value of equity at the end of the prior fiscal year.
<i>BTM</i>	Ratio of the book value of common equity to the market value of equity at the end of the prior fiscal year.
<i>ROA</i>	Ratio of income before extraordinary items to total assets for the prior fiscal year.
<i>Leverage</i>	Ratio of long-term debt to the market value of equity at the end of the prior fiscal year.
<i>Liquidity</i>	Ratio of current assets to the market value of equity at the end of the prior fiscal year.
<i>NOL</i>	Product of the firm's net operating loss and the maximum federal corporate tax rate (35 percent throughout the sample period), scaled by the market value of equity at the end of the prior fiscal year.
<i>Firm Age</i>	Natural log of one plus the firm's age in years at the end of the prior fiscal year, measured as the number of years the company has stock price data on CRSP.
<i>Ret 1 Yr</i>	The firm's cumulative monthly returns over the prior fiscal year, adjusted for the value-weighted market index.
<i>Ret Volatility</i>	The annualized standard deviation of the firm's daily stock returns over the prior fiscal year.
<i>Share Turnover</i>	Total trading volume over the prior fiscal year scaled by the number of shares outstanding at the end of the prior fiscal year.
<i>Inst Own</i>	Percentage of outstanding common stock owned by institutional investors at the end of the prior fiscal year.
<i>Analyst Coverage</i>	Natural log of one plus the number of analyst forecasts for the firm over the prior fiscal year.
<i>Market Attention</i>	Natural log of one plus the total number of all SEC forms on EDGAR downloaded for a firm in the current quarter. The number of EDGAR downloads is estimated using the methodology in <a href="#">Drake et al. (2015)</a> , and described in <a href="#">Ryans (2017)</a> . Data are obtained from James Ryans' website: <a href="http://www.jamesryans.com/">http://www.jamesryans.com/</a> .

## IPO variables:

Variable	Definition
Quarterly IPO Frequency	The number of IPO filings during the calendar quarter made by high- or low-tax aggressive firms, scaled by the number of publicly listed firms as of the end of the quarter, multiplied by 100. An IPO firm is classified as having high (low) tax aggressiveness for a given tax aggressiveness proxy if it has a value above (below) the median value of that proxy for IPO firms filing during the pre-FIN 48 period (calendar quarters 2004Q3-2006Q2). The three tax aggressiveness proxies used to sort IPO firms into groups of high or low tax aggressiveness are <i>Tax Shelter Score</i> <sub>IPO</sub> , <i>BTD Factor</i> <sub>IPO</sub> , and <i>Cash Tax Diff</i> <sub>IPO</sub> .
<i>Tax Shelter Score</i> <sub>IPO</sub>	The firm's estimated sheltering probability, based on Wilson's (2009) model: $\text{PredictedValue} = -4.30 + 6.63 \times \text{BTD} - 1.72 \times \text{LEV} + 0.66 \times \text{AT} + 2.26 \times \text{ROA} + 1.62 \times \text{FOREIGN INCOME} + 1.56 \times \text{R\&D}$ where <i>BTD</i> is the total book-tax difference, as defined below; <i>LEV</i> is long-term debt divided by total assets; <i>AT</i> is the natural log of total assets; <i>ROA</i> is the firm's pre-tax income divided by total assets; <i>FOREIGN INCOME</i> is an indicator variable set equal to one for firm-year observations reporting foreign income, and zero otherwise; and <i>R&amp;D</i> is R&D expense divided by total assets. Values are taken from the IPO prospectus. Each IPO firm's <i>PredictedValue</i> estimate is used to calculate the predicted probability of tax sheltering ( <i>Tax Shelter Score</i> <sub>IPO</sub> ) as follows: $\text{Tax Shelter Score}_{\text{IPO}} = \frac{e^{(\text{PredictedValue})}}{(1 + e^{(\text{PredictedValue})})}$ .
<i>BTD Factor</i> <sub>IPO</sub>	Constructed the same as <i>BTD Factor</i> described previously.
<i>Cash Tax Diff</i> <sub>IPO</sub>	Modified version of the Henry and Sansing (2018) measure, constructed as the difference between cash taxes paid and the product of pretax income and the statutory tax rate, scaled by total assets, as reported in the IPO prospectus. Multiplied by negative one such that higher values of <i>Cash Tax Diff</i> <sub>IPO</sub> reflect more aggressive tax avoidance.
Post-FIN 48	Indicator variable equal to one for calendar quarters 2006Q3 and later, and zero otherwise.
Post-UTP	Indicator variable equal to one for calendar quarters 2010Q1 and later, and zero otherwise.
Market Ret 1 Yr	The cumulative monthly CRSP value-weighted market return for the year prior to the beginning of the quarter.
Aggregate MTB	The median ratio of the market value of equity to the book value of common equity at the end of the prior calendar year.
GDP Growth	The annual percent change in GDP for the year prior to the beginning of the quarter.
Financial Crisis	Indicator variable equal to one for calendar quarters 2008Q1-2009Q4, and zero otherwise.

## Appendix B. Univariate DID estimates of the effect of FIN 48 on firms' propensity to go private

The panels below show the difference-in-differences estimates for firms' propensity to go private between FIN 48 enactment and adoption (*FIN48* = 1) compared to outside quarters (*FIN48* = 0), for firms with high tax aggressiveness (i.e., the "treated" group) and firms with low tax aggressiveness (i.e., the "control" group). Firms are classified as having high tax aggressiveness (low tax aggressiveness) if their tax aggressiveness proxies are above (below) the sample median. Panel A (B, C) shows the computations using the *Tax Shelter Score* (*BTD Factor*, *Cash Tax Diff*) proxy. The difference-in-differences estimates, highlighted, represent the incremental effect of FIN 48 on firms with high tax aggressiveness compared to the effect on firms with low tax aggressiveness. The DID estimate is then multiplied by the number of firm-quarters for which tax aggressiveness is high and *FIN48* = 1 to obtain an estimate of the number of "excess" going private-transactions due to the effect of FIN 48 on firms with high tax aggressiveness.

Panel A: Tax Shelter Score

	<i>FIN48</i> = 0	<i>FIN48</i> = 1	Difference
Low Tax Shelter Score	0.30%	0.34%	0.04%
High Tax Shelter Score	0.32%	0.85%	0.53%
Difference	0.02%	0.51%	0.49%
DID estimate:			0.49%
Number of firm-quarters:			5,520
Excess going-private transactions:			27.0

Panel B: BTD Factor

	<i>FIN48</i> = 0	<i>FIN48</i> = 1	Difference
Low BTD Factor	0.26%	0.36%	0.10%
High BTD Factor	0.36%	0.82%	0.46%
Difference	0.10%	0.46%	0.36%
DID estimate:			0.36%
Number of firm-quarters:			5,586
Excess going-private transactions:			20.1

Panel C: Cash Tax Diff

	FIN48 = 0	FIN48 = 1	Difference
Low Cash Tax Diff	0.29%	0.39%	0.10%
High BCash Tax Diff	0.34%	0.80%	0.47%
Difference	0.05%	0.41%	0.36%
DID estimate:			0.36%
Number of firm-quarters:			5,479
Excess going-private transactions:			19.7

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