Real Effects of Tax Receivable Agreements

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Abstract: This study examines whether incentives created by tax receivable agreements (TRAs) influence firms' investment behavior. TRAs are contracts that require firms to compensate their initial investors for specific tax benefits created early in the firm's life. Accordingly, TRA holders are paid as the tax benefits covered in the agreement are realized by the firm. Because these covered tax benefits are only realized when the firm has sufficient tax liabilities, TRA holders have incentives to discourage the firm from pursuing tax-advantaged investments in order to maximize their TRA payments. Consistent with these incentives, I find that firms with TRAs invest significantly less in R&D, a heavily tax-advantaged form of investment. Furthermore, firms with TRAs exhibit less efficient investment spending than firms without TRAs. Collectively, these findings suggest that the TRA's payment structure influences firms' investment behavior, resulting in less investment in innovative activities and lower investment efficiency.

Keywords: Tax Receivable Agreement, Investment, Research and Development, Innovation, Investment Efficiency

JEL Codes: G31, G34, H25, O31

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1. INTRODUCTION

Tax receivable agreements (TRAs) are contracts that require a firm to compensate its initial investors for the firm's future utilization of tax benefits generated early in the firm's life (e.g., future tax savings generated from basis deductions or net operating losses). TRAs are typically held by investors who owned equity in the firm before it became publicly traded, such as the firm's founders, its management, or private equity (PE) funds. TRA holders receive payments from the firm (hereafter "TRA firm") as the tax benefits covered in the agreement are realized over time. Because realizing tax benefits, and consequently, TRA payments, is a function of firm profitability, TRA holders are incentivized to influence a firm's real activities to maximize their payment value. This study examines whether the incentives created by the TRA's payment structure influence firms' investment behavior.

Examining the real effects of TRAs is important for two reasons. First, TRAs are economically significant. Recent estimates suggest that publicly traded companies are projected to pay over $80 billion on currently outstanding TRAs (Houlihan Lokey 2023). As a result, TRA firms often list the potential for significant cash payments to TRA holders as a material risk in their securities filings (Shobe 2018). Further, the frequency of TRAs has increased significantly in recent years; approximately 19% of initial public offerings (IPOs) in 2021 included a TRA compared to less than 5% in 2010 (Houlihan Lokey 2023; Ritter 2024). The increased use of TRAs has resulted in the development of a secondary market for TRA holders to sell their rights to other investors (Setty and Lee 2022; Thrasher 2023). Thus, my study provides insights into the implications of an increasingly common and economically significant tool used in IPOs.

Second, the governance implications of TRAs are the subject of significant debate in the academic and practitioner literatures (e.g., Grady 2017; Shobe 2018). Although prior research

has examined the role of TRAs in IPOs (Billings et al. 2023; Edwards et al. 2019), little is known about their influence on firms' real activities, including investments in innovation, a key driver of long-term firm and economic growth (Romer 1990; Solow 1957). My study fills this gap in the literature by investigating whether TRAs influence firms' investment behavior.

Theory predicts that managers set their investment policy to maximize the after-tax value of the firm (Modigliani and Miller 1958, 1963; Tobin 1959). However, prior research argues that agency conflicts can significantly affect firms' investment decisions (e.g., Jensen and Meckling 1976). Therefore, if the payment structure of the TRA creates agency conflict, I expect the investment policy of TRA firms to differ from that of non-TRA firms.

At the outset, it is unclear whether TRAs create agency conflict between TRA holders and public shareholders. Prior research argues that TRAs serve as a commitment mechanism that incentivizes TRA holders to seek profit maximizing activities to utilize the tax benefits covered by the TRA (Edwards et al. 2019). This suggests that TRAs may help align incentives between TRA holders and public shareholders. However, TRA holders receive payments only when the firm has sufficient tax liabilities to use the TRA's covered tax benefits. Consequently, TRA holders have significant incentives to discourage the firm from pursuing tax-advantaged investments that reduce current tax liabilities and delay their TRA payments. Thus, to the extent that TRAs create differing incentives between TRA holders and public shareholders, I predict that TRA firms engage in fewer tax-advantaged investments than firms without TRAs.

Although I expect the level of TRA firms' investments to reflect TRA holders' preferences, it is uncertain whether these preferences lead to higher or lower investment efficiency. On the one hand, if TRA firms pursue fewer tax-advantaged investments, they may forgo projects that would otherwise generate a positive net present value (NPV). This suggests

that TRA firms may exhibit lower investment efficiency than non-TRA firms, consistent with prior research that finds that agency conflicts reduce investment efficiency (Amberger et al. 2021; Chay et al. 2023). On the other hand, if TRA holders prefer investments that are *less* tax-advantaged, they may discourage investments motivated by tax-specific reasons. This suggests that TRA firms may exhibit higher investment efficiency than non-TRA firms because prior research finds that investments motivated by tax-specific reasons are associated with less efficient outcomes (e.g., Eichfelder et al. 2023).

Using a sample of IPOs between 2004 and 2023, I identify firms that adopted a TRA through keyword searches in firms' securities filings. To identify TRA holders for each firm, I hand-collect and review TRA contracts. My descriptive evidence suggests that TRA holders comprise a heterogeneous group of individuals and entities, including managers, directors, and PE funds. More importantly, TRA holders possess significant decision-making authority in TRA firms. Specifically, at least one TRA holder, or an individual employed by a TRA holder, is a C-suite executive or director in over 90% of TRA firm-years in my sample. Given that prior research finds that upper-level executives and directors significantly shape corporate policies (e.g., Coles et al. 2008; Faleye et al. 2011; Hambrick and Mason 1984; Malmendier and Tate 2005), this suggests that TRA holders can influence a firm's investment policy.

The preceding discussion suggests that adopting a TRA is a decision made jointly by the firm and its pre-IPO owners. Accordingly, I follow prior research and examine whether the decision to adopt a TRA is a function of the incentives of both the firm and its pre-IPO owners (Edwards et al. 2019). I find that firms are more likely to adopt a TRA when the likelihood of incentive misalignment between pre-IPO owners and new public shareholders is greater, suggesting that firms use TRAs as a commitment mechanism to align their incentives.

Additionally, I find that the likelihood of adopting a TRA increases with factors related to the expected value and future utilization of the firm's tax benefits, consistent with pre-IPO owners using TRAs to extract additional compensation for the firm's tax benefits. Collectively, these results are consistent with firms using TRAs as a mechanism to both align the interests of pre-IPO owners with those of public shareholders and to compensate the firm's pre-IPO owners (Edwards et al. 2019; Grady 2017; Shobe 2018).

To examine the real effects of TRAs on firms' investment policy, I consider two types of investments that vary in the level of their tax advantages: research and development (R&D) and capital expenditures. Prior research argues that R&D investments are longer-term in nature and have more uncertain payoffs relative to capital investment (Coles et al. 2006; Kothari et al. 2002). However, regardless of whether there is a payoff, R&D investments generate substantial immediate and future tax savings through tax credits, deductions, and increased tax planning opportunities (e.g., Cheng et al. 2021; Huang et al. 2020; Williams and Williams 2021). As a result, R&D is a heavily tax-advantaged form of investment. In contrast, although capital expenditures create some tax benefits, they generate more certain payoffs that are realized more quickly, providing less of a deferral advantage for tax purposes (e.g., Bethmann et al. 2018; Kothari et al. 2002). Accordingly, I argue that R&D is an appropriate proxy for tax-advantaged investment, whereas capital expenditures represent a relatively more tax-neutral form of investment.

I examine my first hypothesis using a sample of 550 TRA and 6,761 non-TRA firm-year observations from 2007 to 2023. Consistent with expectations, I find that the presence of a TRA is associated with significantly lower levels of R&D investment. This result suggests that the incentives created by TRAs influence firms' decisions to invest in tax-advantaged activities, such

as R&D. By contrast, I find that the presence of a TRA is not associated with the level of firms' capital expenditures. This finding suggests that TRA-related incentives do not influence firms' investment in activities that are relatively more tax-neutral. Collectively, these results are consistent with TRA holders' incentives influencing the type of activities that firms invest in. From a broader perspective, this finding is important because it suggests that incentives created by TRAs influence the extent to which firms invest in innovative activities.

To provide additional insight into my primary findings, I examine whether the influence of TRAs on tax-advantaged investment varies with firms' capacity to utilize the TRA's covered tax benefits. Firms have a greater capacity to utilize both covered and non-covered tax benefits when they generate high levels of income. Accordingly, I expect TRA holders to have less incentive to discourage tax-advantaged investment when the firm is highly profitable. Consistent with this expectation, I find that the influence of TRAs on firms' tax-advantaged investments is significantly attenuated when firms are highly profitable. This result provides further evidence that the incentives created by TRAs influence firms' investment policy.

To examine whether TRAs influence firms' investment efficiency, I follow prior research and estimate investment efficiency as a function of firms' investment opportunities (Biddle et al. 2009; Chen et al. 2011). I find that TRA firms exhibit significantly lower investment efficiency relative to their non-TRA peers. Furthermore, I find that the negative effect of TRAs on investment efficiency is concentrated among underinvesting firms, consistent with TRA firms forgoing investment projects that would otherwise provide a positive NPV to public shareholders. These results support the view that TRAs create agency conflict between TRA holders and public shareholders, leading to less efficient allocation of internal capital (Amberger et al. 2021; Chay et al. 2023).

My study makes several contributions. First, my study contributes to the literature that examines TRAs. Despite the increasing economic importance of TRAs, prior research primarily focuses on IPO-specific outcomes but does not explore how TRAs influence firms' investment decisions after going public (e.g., Billings et al. 2023; Edwards et al. 2019). My study fills this gap in the literature by providing evidence that TRA holders' incentives influence firms' real activities. Specifically, my findings suggest that TRAs are associated with lower levels of R&D investment and lower investment efficiency. These findings are consistent with TRAs creating incentives that reduce firm innovation.

Second, my study contributes to research that investigates managerial incentives to engage in tax planning. Prior research finds that compensation contracts that reward managers based on after-tax performance encourage executives to engage in more tax planning and tax-related earnings management (Gaertner 2014; Phillips 2003; Powers et al. 2016). However, these studies only investigate contractual terms that incentivize greater tax planning behavior. By contrast, the compensation structure of TRAs discourages tax minimization, providing a rare opportunity to examine the consequences of an explicit managerial disincentive to pursue tax-advantaged investments. My findings suggest that boards should consider the incentives created by TRAs when designing compensation packages for managers who are also TRA holders.

Finally, my study should be of interest to policymakers given the growing number of newly public firms with TRAs and the frequent use of tax policy to encourage investment. My results provide evidence that the payment structure of the TRA influences firms' decisions to pursue tax-advantaged investments. Accordingly, these findings suggest that policymakers should consider how contractual arrangements such as TRAs may influence firms' response to tax policies, especially those designed to encourage investments in innovation.

2. BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 Background on TRAs

TRAs are contracts between the firm and its pre-IPO owners that compensate the pre-IPO owners for a firm's future utilization of specified tax benefits. TRAs cover a specified set of tax benefits ("covered tax benefits") that are generated before the firm's IPO. The most common covered tax benefits are future amortization deductions and net operating loss carryforwards. Importantly, TRAs do not cover new tax benefits created after the IPO.[1] Under standard contract terms, the firm pays 85% of the tax savings from utilizing covered tax benefits to TRA holders and retains the remaining 15% (Jacobs 2024; Paul and Sabbah 2013).

As discussed previously, the adoption of TRAs has increased significantly since 2010, and they were used in approximately 19% of IPOs in 2021 (Houlihan Lokey 2023; Ritter 2024). Prior research has documented that TRAs are commonly used in conjunction with "supercharged" IPOs to cover tax benefits relating to future depreciation and amortization deductions (Edwards et al. 2019).[2] However, TRAs are also used outside the supercharged IPO structure (Shobe 2018). For example, Spirit Airlines did not undergo a supercharged IPO but instead agreed to a TRA that covered its pre-IPO net operating losses. Furthermore, other types of pre-IPO tax benefits can be contracted under a TRA, including different types of tax credits,

[1] A technical exception to this rule is for TRAs that arise from a supercharged IPO involving an umbrella-partnership corporation ("Up-C") structure when pre-IPO owners choose to exchange their passthrough ownership interests for C corporation shares in periods after the IPO process has been completed, resulting in a step-up in the basis of assets held by the passthrough entity in the post-IPO period. I provide further detail in Appendix A.

[2] In supercharged IPOs, firms generate substantial tax benefits immediately before the offering through a pre-IPO reorganization. However, the reorganization also triggers capital gains tax for pre-IPO owners (Edwards et al. 2019). As a result, TRAs are used in a supercharged IPO to compensate pre-IPO owners for the upfront tax cost of the reorganization, enabling pre-IPO owners to share in the future tax savings from the tax benefits generated in the transaction. I provide further detail regarding the supercharged IPO and its resulting organizational structure in Appendix A.

losses, and deductions. As such, TRAs are a conceptually and contractually distinct instrument from the supercharged IPO and are independently utilized to cover a wide variety of tax benefits.

Pre-IPO shareholders enter into a TRA because it allows them to monetize the tax benefits that the firm generated prior to going public. This incentive is consistent with practitioner arguments that public markets do not assign full value to an IPO firm's tax benefits (Lee 2024; Levine 2024; Paul and Sabbah 2013; Shobe 2018). Indeed, many commentators argue that mispricing occurs because the valuations of IPO firms are typically based on revenue or earnings before interest, taxes, depreciation, and amortization (EBITDA), neither of which reflects any future savings a firm may realize from utilizing pre-IPO tax benefits (Lee 2024; Paul and Sabbah 2013). Practitioners also argue that valuing tax benefits is inherently challenging because their realization by the firm is contingent on uncertain future events (Paul and Sabbah 2013). Collectively, this line of reasoning suggests that pre-IPO owners are more likely to enter a TRA when they believe public markets will not fully compensate them for the value of the firm's future tax savings.

From the firm's perspective, TRAs serve as a commitment mechanism that aligns the interests of TRA holders with those of public shareholders (Edwards et al. 2019). Aligning the interests of both parties is important because TRA holders, often founders, management, and private equity firms, retain significant influence over the firm's operations. TRAs incentivize holders to maximize firm profitability because they are compensated only when the firm generates sufficient taxable income to realize the covered tax benefits (Edwards et al. 2019). Thus, firms are more likely to enter a TRA when they expect a greater misalignment of interests between pre-IPO owners and new public shareholders.

As discussed previously, TRAs require a firm to compensate holders for a percentage of the savings from covered tax benefits (Greenwood et al. 2018; Paul and Sabbah 2013). To compute the tax savings from covered benefits, the firm compares its annual tax liability *with* the covered tax benefits to its annual tax liability *without* the covered tax benefits (Paul and Sabbah 2013). Importantly, the TRA calculation implies that the firm's tax benefits *not* covered by the TRA reduce a firm's tax liability before the covered benefits, establishing a strict ordering rule when calculating TRA payments (Greenwood et al. 2018; Paul and Sabbah 2013). As a result, new tax benefits generated by the firm after the IPO can reduce the magnitude of tax savings that a firm realizes from the TRA's covered tax benefits.[3] Thus, the mechanics of the TRA calculation create a disincentive for TRA holders to influence the firm to avoid taxes or pursue tax-advantaged investments.

From a financial reporting perspective, firms account for the TRA at the IPO date by recording a contingent liability equal to the sharing percentage (e.g., 85%) multiplied by the expected future tax savings from utilizing the TRA's covered tax benefits. Importantly, TRAs are typically recorded in an equity account (e.g., additional paid-in capital) on the balance sheet rather than as an expense on the income statement to reflect future payment to pre-IPO owners.[4] As TRA payments are made in the post-IPO period, the firm reduces the TRA-related contingent liability by recording the cash payment made to TRA holders. However, if the expected value of the deferred tax asset associated with the covered tax benefits changes in the post-IPO period (e.g., due to a valuation allowance change), any corresponding change to the contingent TRA liability is recorded as a gain or loss on remeasurement and reflected on the income statement. Thus, absent changes to the value of the TRA-related deferred tax asset, transactions associated

[3] Numerical examples of the "with and without" calculation are provided in Appendix A.
[4] Example journal entries are provided in Appendix A.

with the TRA, including payments to TRA holders, are not recorded as expenses in the firm's financial statements.

2.2 Hypothesis Development

Theory predicts that firms set their investment policy to maximize after-tax value (Modigliani and Miller 1958, 1963; Tobin 1959). The Scholes-Wolfson framework extends this classical investment theory to note that firms should consider "all parties, all taxes, and all costs" to maximize after-tax firm value (Scholes and Wolfson 1992, p. 3). Thus, firms potentially depart from theoretical investment models when agency conflicts arise among the firm's relevant stakeholders. Indeed, prior literature argues that agency conflicts arising from a misalignment of incentives can significantly affect firms' investment decisions (e.g., Jensen and Meckling 1976; Nini et al. 2009; Shleifer and Vishny 1989). For example, Harford et al. (2012) find that managers' desire to extract private benefits leads to more value-destroying investments made by entrenched managers. Therefore, if the payment structure of the TRA creates agency conflict, I expect the investment policy of TRA firms to differ from that of non-TRA firms.

However, *ex ante*, it is uncertain whether TRAs create agency conflict between TRA holders and public shareholders. On the one hand, the TRA's payment structure creates incentives for TRA holders to discourage the firm from pursuing tax-advantaged investments. Specifically, as discussed in Section 2.1, the firm compensates TRA holders based on the magnitude of the tax savings it realizes from the TRA's covered tax benefits. Thus, activities that reduce the firm's tax liability, including investment decisions, directly reduce TRA holders' compensation. As a result, TRA holders have significant incentives to discourage the firm from pursuing tax-advantaged investments because doing so maximizes the value of their payments. Consequently, the investment policy of TRA firms should differ from that of non-TRA firms

consistent with the agency conflict created by the TRA's payment structure. Specifically, I expect that TRA firms pursue fewer tax-advantaged investments than firms without TRAs.

On the other hand, Edwards et al. (2019) argue that TRAs align the incentives of TRA holders with those of public shareholders. Specifically, the authors characterize the TRA as an alternative commitment mechanism. They contend that TRAs create incentives for TRA holders to seek profit maximizing strategies because taxable income is required to realize the TRA's covered tax benefits and, thus, for TRA holders to receive TRA payments. This line of reasoning suggests that TRA firms will adopt similar investment policies as non-TRA firms.

Despite the opposing argument from Edwards et al. (2019), I expect TRA holders to act on their incentive to maximize TRA payments and that this incentive will in turn affect TRA firms' investment policy. Specifically, if TRA holders seek to maximize their TRA payments, I expect that they will influence TRA firms to pursue fewer tax-advantaged investments. I formalize this prediction with the following hypothesis, stated in the alternative:

H1: *TRA firms engage in fewer tax-advantaged investments relative to non-TRA firms*.

Although H1 predicts that TRA firms pursue fewer tax-advantaged investments than non-TRA firms, it is unclear whether TRA firms' overall investment spending is efficient relative to their investment opportunity set. On the one hand, investment theory predicts a greater uptake of investment projects when firms can claim tax benefits to marginally lower the cost of investment (Hall and Jorgenson 1976; Rao 2016). This theory posits that the NPV of an investment is more likely to be positive when the investment offers more tax advantages. However, because TRA holders have incentives to discourage tax-advantaged investments, TRA firms may forgo projects that would otherwise provide a positive NPV for public shareholders. This line of reasoning is consistent with prior research that finds that agency conflicts reduce investment

efficiency (Amberger et al. 2021; Chay et al. 2023). Thus, if TRAs create agency conflict between TRA holders and public shareholders, TRA firms should exhibit lower investment efficiency relative to non-TRA firms.

On the other hand, if TRA holders prefer investments that are *less* tax-advantaged, they may discourage investments motivated by tax-specific reasons. Prior research offers evidence that tax-motivated investments lead to inefficient outcomes. For example, De Simone et al. (2022) find that the investment spending of firms that aggressively shift income is significantly less sensitive to local investment opportunities. They argue that this result is consistent with aggressive income shifters moving their investments to low-tax jurisdictions to support taxable income shifted to those jurisdictions, leading to less efficient investment spending. Further, Eichfelder et al. (2023) find that investments induced by depreciation-based tax incentives are less productive in generating future revenue. Collectively, these studies support the idea that firms motivated by tax reasons exhibit lower investment efficiency. Thus, if TRA firms make investment decisions less motivated by tax reasons, they may exhibit higher investment efficiency. Given the opposing predictions of these two competing views, I present the following hypothesis, stated in the null:

H2*: TRA firms exhibit no difference in investment efficiency relative to non-TRA firms.*

3. SAMPLE AND RESEARCH DESIGN

3.1 Data and Sample

To identify firms that have a TRA, I conduct a keyword search of firms' S-1, S-1A, and 10-K filings.[5] I manually review each filing and hand-collect TRA contracts to confirm the

[5] I use directEDGAR to perform the keyword searches. Specifically, I search for the phrases "tax receivable agreement," "tax receivable arrangement," and pluralized variations of both phrases (e.g., taxes receivable agreement, tax receivables agreement, tax receivable agreements).

presence of a TRA for each firm identified in the sample. I also review annual filings and press releases to identify terminations of TRAs. I obtain financial data from Compustat, stock return data from CRSP, IPO and merger and acquisition (M&A) data from LSEG's Securities Data Company (SDC) Platinum, director and executive data from BoardEx, and state-level tax data from Glaeser and Yoo (2024). I identify corporate headquarter locations using data from Jennings et al. (2017) and extend this data for my sample period using data from both Bill McDonald's website and Gao et al. (2021).

To identify TRA holders, I hand-collect names of individuals and entities from the signature pages of TRA contracts. In cases in which the TRA contract does not provide sufficient detail in the signature pages to identify the TRA holders, I read the firm's IPO filings (i.e., S-1 and/or S-1A) to determine the set of pre-IPO shareholders that are TRA holders. If the firm discloses a particular group of pre-IPO shareholders that is party to the TRA (e.g., shareholders that hold a certain class of shares), I hand-collect the names of the specified group from the "beneficial ownership" and "selling shareholders" sections of the firm's IPO filings. I use a fuzzy-matching algorithm to match names of TRA holders to BoardEx individuals and manually check matches to ensure accuracy. Finally, I use S&P Capital IQ to ascertain whether an entity listed as a TRA holder is a PE firm, supplementing this process with searches of the entity's name in Pitchbook, Crunchbase, SEC filings, and business press.[6]

Because the decision to adopt a TRA arises at the time a firm goes public, I begin with a sample of U.S. IPOs from 2004 to 2023 with an offer price of at least five dollars (e.g., Ritter and Welch 2002) and coverage of IPO-level determinants of TRA adoption. The sample of IPOs begins in 2004, consistent with prior research on supercharged IPOs (Edwards et al. 2019;

[6] For the purposes of identifying PE-affiliated TRA holders, I consider an entity to be a private equity firm if its business is to raise capital for either venture capital funds or buyout funds, consistent with Borysoff et al. (2024).

Fleischer and Staudt 2014). To construct my firm-year sample, I collect all firm-year observations available for each IPO firm from 2007 to 2023. My firm-year sample begins in 2007 to ensure consistent financial reporting incentives for income tax positions related to R&D after the passage of FASB Interpretation No. 48 (FIN 48) (Williams and Williams 2021). Given the recent increase in the frequency of TRAs, my sample ends in 2023 to include as many TRA firm-years as possible. Consistent with prior corporate investment research, I exclude firms in financial and utility industries because of regulatory differences (e.g., Biddle et al. 2009). After excluding observations with missing firm-year level variables used in my empirical analyses, my baseline sample consists of 7,311 firm-year observations, comprising 550 TRA and 6,761 non-TRA firm-year observations. I present details of the sample selection in Table 1.

3.2 Measures of Tax-Advantaged Investment

Consistent with prior research, I use R&D and capital expenditures to proxy for firms' investment activities (Anderson et al. 2012; Coles et al. 2006; Kothari et al. 2002). Although both R&D and capital expenditures are common investment activities, they differ significantly with respect to their tax advantages, including the timing and certainty of their payoffs. To encourage innovation, both the U.S. federal government and many state governments provide substantial tax credits for firms that invest in R&D activities. Indeed, consistent with the substantial tax benefits associated with R&D investment, prior research finds that R&D intensity is associated with lower effective tax rates (Cheng et al. 2021; Christensen et al. 2022; Gallemore and Labro 2015). Although not a direct benefit, the innovative nature of R&D investments creates future tax planning opportunities by yielding potentially valuable intellectual property, which can be used to shift income to low-tax jurisdictions through transfer pricing strategies (Cheng et al. 2021; Williams and Williams 2021). In addition to immediate and future

tax benefits, prior research argues that payoffs from R&D investment are more uncertain and have a longer duration than those from capital expenditures, suggesting that firms are unlikely to generate income from R&D investment for an extended period of time (Coles et al. 2006; Kothari et al. 2002). As a result, investments in R&D benefit from a significant deferral advantage for tax purposes. Collectively, these features create substantial immediate and future tax advantages that make R&D expenditures an appropriate proxy for tax-advantaged investment.

In contrast to R&D, capital expenditures differ in the extent of tax benefits available. Capital expenditures generate depreciation deductions that reduce taxable income, but do not create the same level of tax savings as credits. Further, the payoffs from capital expenditures are more certain and are realized more quickly, which means capital expenditures offer less of a deferral advantage for tax purposes relative to R&D (Anderson et al. 2012; Bethmann et al. 2018; Kothari et al. 2002). Despite these reasons, several industry practitioners still caution that excessive capital spending may significantly lower TRA holders' compensation because of increased depreciation deductions (Greenwood et al. 2017; Greenwood et al. 2018). Thus, although capital expenditures offer some tax advantages, the preceding discussion suggests that they represent a more tax-neutral form of investment relative to R&D.

3.3 Research Design

As discussed in Section 2.1, the decision to implement a TRA generally occurs in conjunction with the firm's IPO process (Shobe 2018). Importantly, the decision to adopt a TRA is made jointly by the firm and its pre-IPO owners. Therefore, I examine whether the decision to adopt a TRA is a function of the incentives of both the firm and its pre-IPO owners. Specifically, I estimate the following determinants model at the IPO-level, using logistic regression:

$$\Pr(TRA\ IPO_j = 1) = f(\alpha_0 + \alpha_1 Size\ Pre_j + \alpha_2 PTI\ Pre_j + \alpha_3 Lev\ Pre_j + \alpha_4 Net\ DTA\ Pre_j + \alpha_5 Intan\ Pre_j + \alpha_6 Big4\ Pre_j + \alpha_7 NY\ Law_j + \alpha_8 Dual\ Class_j + \alpha_9 SPAC_j + \alpha_{10} VC\ Back_j + \alpha_{11} PE\ Back_j + IPO\ Year\ FE) \quad (1)$$

where the dependent variable, *TRA IPO*, is an indicator equal to one if the firm adopts a TRA, and zero otherwise. Prior research argues that firms use TRAs as a commitment mechanism to align the incentives of pre-IPO owners with those of public shareholders (Edwards et al. 2019). As a result, I include factors in Equation (1) that suggest a greater likelihood of incentive misalignment between pre-IPO owners and new public shareholders. Specifically, I include indicators for dual class ownership (*Dual Class*), the use of a special purpose acquisition company (*SPAC*), and venture capital (*VC Back*) and private equity backing (*PE Back*) (Cadman and Sunder 2014; Dong et al. 2020; Gahng et al. 2023; Masulis et al. 2009).[7]

From the pre-IPO owners' perspective, TRAs are used to extract additional compensation through the monetization of the firm's tax benefits (Grady 2017; Shobe 2018). As a result, I also include factors in Equation (1) related to the expected value and future utilization of the firm's tax benefits. Specifically, I follow the determinants model from Edwards et al. (2019) and include pre-IPO size (*Size Pre*), profitability (*PTI Pre*), leverage (*Lev Pre*), deferred tax assets (*Net DTA Pre*), and intangibility (*Intan Pre*). I also include indicators for the use of a Big Four auditor (*Big 4 Pre*) and a New York based law firm (*NY Law*) because prior research argues that professional advisors influence the use and proliferation of TRAs in IPOs (Billings et al. 2023; Edwards et al. 2019). Finally, I include IPO year fixed effects (*IPO Year FE*) to address differences in TRA adoption across time. I define all variables in Appendix B.

[7] Private operating firms that become publicly traded via SPAC merger face the decision to adopt a TRA when the SPAC merger is consummated, and not when the SPAC entity completes its IPO. Accordingly, I construct pre-IPO financial statement variables and financial sponsor status (private equity and venture capital backing) at the private operating firm-level, using the year of the SPAC merger as the "IPO year.". This design choice ensures that these variables are measured consistently for the operating firm at the time of the TRA adoption decision, aligning with the measurement timing for firms that go public via traditional IPO.

Following the IPO, early termination of the TRA is rare, suggesting that the presence of a TRA is relatively "sticky" over time.[8] Because firms make this choice at IPO, it is possible that pre-IPO factors influence both firms' selection into a TRA and post-IPO investment outcomes. I address this selection concern by using entropy balancing to construct a control group of non-TRA firms. Entropy balancing is a preprocessing procedure that reweights observations to achieve covariate balance between treatment and control groups (Hainmueller 2012). I estimate the entropy balance weights, using the default tolerance, on the first and second moments of each IPO-level determinant in Equation (1). For each empirical test, I apply these weights across every year that an individual firm is included in the sample (McMullin and Schonberger 2022). This design choice addresses the concern that observable pre-IPO characteristics related to the decision to implement a TRA may drive the investment effects that I observe.[9]

To examine the influence of TRAs on the level of firms' tax-advantaged investments, I estimate the following equation by ordinary least squares (OLS):

$$R\&D_{i,t+1} \text{ or } Capex_{i,t+1} = \beta_0 + \beta_1 TRA_{i,t} + \beta Invest\ Controls + \beta IPO\ Controls + Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (2)$$

where the dependent variable is measured one year ahead and is either total R&D expenditures scaled by beginning of year total assets (*R&D*) or total capital expenditures scaled by beginning of year net property, plant, and equipment (*Capex*) (Biddle et al. 2009).[10] *TRA* is an indicator

[8] I drop observations of a firm for years following a termination of the TRA to ensure that the sample weights estimated at IPO are applied consistently across TRA and non-TRA firms. However, results are similar if instead I include these observations and code them as *TRA* = 0 for years after the TRA is terminated (untabulated).
[9] In untabulated analyses, I obtain similar inferences for my tests of H1 and H2 across three alternative matching methods: (1) entropy balancing after trimming observations with propensity scores above 95% and below 5% (McMullin and Schonberger 2022); (2) propensity score matching using a caliper distance of 0.03 and matching without replacement (Shipman et al. 2017); and (3) coarsened exact matching, creating bins using the following determinants of TRA adoption: *PTI Pre*, *Intan Pre*, *Dual Class*, *SPAC*, *VC Back*, and *PE Back* (Iacus et al. 2012).
[10] The use of different scalars for R&D and capital expenditures is consistent with the design choice of several prior studies (e.g., Biddle et al. 2009; Lester 2019). However, the results of the capital expenditures analysis remain similar if I instead scale by beginning of year total assets (untabulated).

equal to one if the firm is contracted under a TRA at the end of the year, and zero otherwise. A negative and significant coefficient on *TRA* when the dependent variable is *R&D* is consistent with H1's prediction that TRA holders discourage firms' investment in tax-advantaged activities.

I include control variables for factors that prior research suggests influence firm-level investment decisions. *Invest Controls* is a vector of controls measured in year *t*, following prior research examining firm-level investment (e.g., Biddle et al. 2009; Gallemore et al. 2025; Shroff 2017). These controls are intended to capture firms' ability to fund investments and include the following: size (*Size*), leverage (*Lev*), performance (*PTROA*), market-to-book (*MTB*), sales growth (*Sales Growth*), cash holdings (*Cash*), dividend paying status (*Div*), cash flow (*CFO Sales*), firm age (*Age*), and loss status (*Loss*). To alleviate concern that *TRA* simply identifies firms with greater levels of tax assets, I supplement the model with additional controls to measure the firm's stock of available tax assets, including net deferred tax assets (*DTA*), net deferred tax liabilities (*DTL*), the existence of net operating losses (*NOL*), the change in net operating losses (*Chg NOL*), and foreign operations that may give rise to foreign tax credits (*Foreign*) (Schwab et al. 2022).

I also include *IPO Controls*, a vector of control variables, that includes all IPO-level firm characteristics from Equation (1) to ensure that my results are robust to the inclusion of factors that influence the choice to adopt a TRA (Shipman et al. 2017). I include industry (by Fama-French 48 classification) and year fixed effects to control for unobservable industry- and time-specific factors. Standard errors are clustered by firm. I winsorize all continuous variables at the 1st and 99th percentiles to account for outliers.

To examine the influence of TRAs on investment efficiency, I follow prior research to model firms' investment as a function of their investment opportunities, as proxied by firms'

sales growth (Biddle et al. 2009; Chen et al. 2011). Following these studies, I first estimate the following regression for each unique industry-year combination with at least 20 observations:

$$\begin{aligned} Total\ Invest_{i,t+1} = {} & \delta_0 + \delta_1 Sales\ Growth_{i,t} + \delta_2 Neg\ Growth_{i,t} \\ & + \delta_3 Neg\ Growth_{i,t} \times Sales\ Growth_{i,t} + \sigma_{i,t} \end{aligned} \quad (3)$$

where the dependent variable is the sum of R&D and capital expenditures less the sale of property, plant, and equipment, divided by beginning of year total assets. *Sales Growth* is the change in sales from year *t-1* to year *t*, scaled by sales in year *t* and *Neg Growth* is an indicator equal to one if *Sales Growth* is negative, and zero otherwise. Consistent with Chen et al. (2011), I estimate Equation (3) by industry-year and extract the residuals to measure the extent of firms' over- and underinvestment relative to their investment opportunities. Following Chay et al. (2023), I use the absolute value of the residuals multiplied by negative one as my measure of investment efficiency, *Invest Efficiency*, where higher values indicate greater efficiency.

To test my second hypothesis, I estimate the following equation by OLS to test the association between TRAs and investment efficiency:

$$\begin{aligned} Invest\ Efficiency_{,t} = {} & \phi_0 + \phi_1 TRA_{i,t} + \phi Efficiency\ Controls \\ & + \phi IPO\ Controls + Industry\ FE + Year\ FE + \omega_{i,t} \end{aligned} \quad (4)$$

where *Efficiency Controls* is a vector of control variables that prior research suggests influence firms' investment efficiency, including size (*Size*); firm value (*Tobin's Q*); tangibility (*Tangibility*); firm and industry leverage (*K-Structure* and *Ind K-Structure*); cash flow (*CFO Sales*); the ratio of cash to property, plant, and equipment (*Slack*); dividends (*Div*); firm age (*Age*); loss status (*Loss*); cash holdings (*Cash*); financial constraints (*Z-Score*); and operating cycle (*Operating Cycle*) (Biddle et al. 2009; Chay et al. 2023).[11] I also include controls for firms'

[11] Because many firms (including TRA firms) in the sample are newly public, they do not have a long history of publicly-available financial data in Compustat. Consistent with this, the inclusion in Equation (4) of standard deviation-based control variables (volatility of cash flow, sales, and capital expenditures) used by Biddle et al. (2009) that require five years of historical data reduces the sample size by over 50%. Therefore, I exclude these

stock of available tax assets (*DTA*, *DTL*, *NOL*, *Chg NOL*, and *Foreign*) to account for the possibility that differences in investment efficiency are correlated with TRA firms' access to tax benefits. Similar to Equation (2), I supplement this model with *IPO Controls* to control for factors relating to a firm's choice to adopt a TRA. Finally, I include industry and year fixed effects to control for unobservable industry- and time-specific factors. A negative (positive) and significant coefficient on *TRA* would suggest that the presence of a TRA is associated with lower (higher) investment efficiency.

4. EMPIRICAL RESULTS

4.1 Descriptive Statistics and Determinants of TRA Adoption

To provide evidence of whether TRA holders have the ability to influence firm activities, I collect descriptive evidence on whether TRA holders occupy positions in the firm with decision-making authority. I treat all individuals named as signatories of the TRA contract as TRA holders. Because some TRA holders are entities (e.g., PE funds), I also treat individuals employed by entities named as signatories in the TRA contract as TRA holders. Among TRA firms in my sample, I match all identified TRA holders to BoardEx and extract their job titles by year. I construct a series of indicator variables at the firm-year level to separately identify whether the firm has at least one TRA holder that is the chief executive officer (CEO), the chief financial officer (CFO), a director, the chairman of the board, or a C-suite member.

Table 2 presents the characteristics of TRA holders at the TRA firm-year level. Among TRA firm-years with available data, the CEO is a TRA holder in over 50% of the sample. Further, nearly 60% of TRA firm-years have at least one C-suite executive who is a TRA holder. Given the literature on upper-echelons theory that supports the influence of top executives on

standard deviation-based control variables to prevent substantial sample attrition. However, the results are qualitatively similar if I include the standard deviation based controls in Equation (4) (untabulated).

corporate policies (e.g., Hambrick and Mason 1984; Malmendier and Tate 2005), this descriptive evidence confirms that most TRA firms have at least one TRA holder who is a top executive with significant decision-making power.

To provide a more complete picture of the potential strategic influence of TRA holders, I also identify the presence of TRA holders who are directors. Prior research finds that directors play both a monitoring and an advising role and that their capacity in both roles can significantly influence the firm's decisions (e.g., Coles et al. 2008; Faleye et al. 2011; Masulis and Zhang 2019). I find that 91% of the TRA sample have at least one TRA holder who is also a firm director. My descriptive statistics also suggest that, on average, approximately one-third of the board of directors are TRA holders (34.5%). These results suggest that a substantial number of TRA holders also serve on the board, providing opportunities to play both a monitoring and advising role within the firm. Collectively, the descriptive evidence in Table 2 suggests that TRA holders occupy positions with significant influence over firm-level policies.

Finally, I examine the extent to which PE firms are TRA holders because popular press coverage suggests that PE firms often use TRAs (e.g., Foldy 2023; Kupicec et al. 2024). Table 2 shows that 68.5% of TRA firms in the sample have at least one PE firm that is a TRA holder. Furthermore, the average TRA firm employs at least one individual who is affiliated with a PE firm that is simultaneously a TRA holder.[12] Because PE funds have finite lives that are likely to end shortly after a portfolio firm is taken public, PE-TRA holders potentially have powerful incentives to accelerate the payout from a TRA to maximize fund performance before the fund is liquidated (Cadman and Sunder 2014; Jenkinson et al. 2020).

[12] For example, in many cases, a partner at the PE firm also sits on the board of the TRA firm (Dallas 2013; McDonald 2008).

Table 3, Panel A presents the results of Equation (1), which models the decision to adopt a TRA. Consistent with the views of both academics and practitioners, I find that the incentives of both the firm and the pre-IPO owners influence the decision to adopt a TRA. Specifically, Column (3) shows that dual class structures, special purpose acquisition companies (SPACs), and private-equity backing are significant predictors ($p < 0.01$) of the TRA decision, suggesting that TRAs are more common when the likelihood of misaligned incentives between pre-IPO owners and public shareholders increases (e.g., Dong et al. 2020; Gahng et al. 2023; Masulis et al. 2009). These results are consistent with firms seeking to adopt a TRA as a commitment mechanism to align the incentives of pre-IPO owners with those of new public shareholders (Edwards et al. 2019).

From the pre-IPO owners' perspective, I find evidence that firms are more likely to adopt a TRA when the expected value and future utilization of the firm's tax benefits is greater. Specifically, Column (3) shows that pre-IPO intangibility ($p < 0.01$) and profitability ($p < 0.01$) are positively associated with TRA adoption. Pre-IPO intangibility serves as a proxy for the future amortization of goodwill, a common tax benefit covered by the TRA, while profitability serves as an indicator for whether a firm has capacity to utilize the covered tax benefits (Edwards et al. 2019). These results are consistent with pre-IPO owners' incentive to monetize the tax benefits of the firm to extract additional compensation.

The determinants model in Table 3, Panel A displays an area under the ROC curve of over 0.90 in both specifications, suggesting that the model has strong discriminatory power both with and without IPO year fixed effects. This is important because I use entropy balancing to construct a non-TRA control group using the determinants in Equation (1). I present the mean and variance of these determinants before and after entropy balancing for the TRA and non-TRA

samples in Table 3, Panel B. The results after entropy balancing suggest that the estimated sample weights achieve covariate balance between TRA and non-TRA firms for each of the determinants used in Equation (1). This reduces concern that pre-IPO characteristics that determine firms' selection into a TRA also drive the firm's post-IPO investment policy choices.

4.2 Summary Statistics

Table 4 presents summary statistics for the sample used in my empirical analyses. The mean of *TRA* is 0.075, indicating that TRA firms comprise 7.5% of the firm-years in my sample. Further, the mean of one-year ahead *R&D* (*Capex*) is 0.107 (0.353), indicating that sample firms spend on average 10.7% (35.3%) of beginning-of-year total assets (property, plant, and equipment) on R&D expenditures (capital expenditures). The distribution of these investment outcome variables as well as the distribution of my measure of investment efficiency (*Invest Efficiency*) are comparable to those of prior investment studies in tax-related settings (e.g., Chay et al. 2023; Huang et al. 2020; Max et al. 2024).

4.3 TRAs and Investment Policy

Table 5, Column (1) presents the results of testing my first hypothesis. Consistent with H1, I find that the coefficient on *TRA* is negative and significant ($p < 0.01$), which suggests that the presence of a TRA is associated with significantly lower R&D spending relative to firms without a TRA.[13] Economically, TRA firms spend roughly 22.4% less on R&D relative to the sample mean. On average, this translates to TRA firms spending $62 million less on R&D than non-TRA firms.[14] Furthermore, the signs of the coefficients on the control variables are

[13] As is common in accounting and finance research, I replace missing values of R&D expenditures (XRD) in Compustat with zero. However, in untabulated analyses, the results in Table 5 are similar if I instead: (1) drop all observations with missing R&D; (2) add a control variable for an indicator equal to one if the observation is missing R&D, and zero otherwise (Koh and Reeb 2015); or (3) replace missing values with multiple imputation estimates of R&D obtained from Wendun Wang's website based on the methods described in Koh et al. (2022).

[14] This estimate is based on the coefficient on *TRA* multiplied by the sample mean of total assets at year *t* (e.g., the scalar of $R\&D_{t+1}$), which is $2,585 million.

generally similar to those reported in prior research (Biddle et al. 2009; Shroff 2017; Williams and Williams 2021). Given that R&D investment is heavily tax-advantaged, my results are consistent with TRA holders discouraging the firm from pursuing tax-advantaged investments so that their TRA payments are maximized. From a broader perspective, this result also suggests that the incentives of TRA holders reduce firms' investment in innovative activities.

Table 5, Column (2) presents the results of my analysis that examines the association between TRAs and capital expenditures. I find that the coefficient on *TRA* is not significantly different from zero ($p > 0.10$), which suggests that the presence of a TRA is not associated with the level of a firm's capital spending. Because capital expenditures generate faster and more certain payoffs than R&D (Coles et al. 2006; Kothari et al. 2002), TRA holders potentially encourage the firm to pursue more capital projects to facilitate growth and greater capacity for taxable income. However, because capital expenditures generate deductions to taxable income, excessive capital spending could delay the realization of the TRA's covered tax benefits (Greenwood et al. 2018; Greenwood et al. 2017). Thus, this null result reflects the countervailing incentives of TRA holders to both encourage near-term profitability and discourage large reductions to the firm's tax liability. Furthermore, the result suggests that the incentive to align with public shareholders, as argued by Edwards et al. (2019), potentially dominates when the investment's tax advantages are not sufficiently large.

Finally, I combine firms' R&D and capital spending into a composite measure of total investment, *Total Invest*, equal to the sum of firms' R&D and capital expenditures less the sale of property, plant, and equipment, scaled by beginning of year total assets. Table 5, Column (3) presents the results of re-estimating Equation (2), replacing the dependent variable with *Total Invest* measured one year ahead. The coefficient on *TRA* is negative and significant ($p < 0.10$),

providing evidence that TRA firms are associated with lower total investment spending relative to non-TRA firms. Combined with the R&D result in Column (1), this suggests that TRA firms' lower R&D spending contributes to significantly lower total investment spending. Collectively, the results in Table 5 suggest that TRA holders' incentives significantly influence firms' investment activities.

4.4 TRAs, Profitability, and Tax-Advantaged Investment

To provide additional insight into my primary findings for H1, I examine whether the influence of TRAs on R&D investment varies predictably with firm profitability. Prior research argues that TRAs help align the incentives of pre-IPO owners with those of public shareholders by encouraging TRA holders to maximize profitability (Edwards et al. 2019). Importantly, if the firm is highly profitable, it is more likely to be able to utilize both covered and non-covered tax benefits. Thus, TRA holders will have weaker incentives to discourage the firm from pursuing tax-advantaged investments because non-covered tax benefits obtained are less likely to reduce a firm's capacity to utilize covered tax benefits. Consequently, I expect the association between TRAs and R&D investment to be less pronounced for highly profitable firms.

I employ two proxies for high profitability, one based on pre-tax book income and the other based on estimated taxable income (Ayers et al. 2009). I define *High Profit* as either *High Pre Tax Income* or *High Est Tax Income*. *High Pre Tax Income* (*High Est Tax Income*) is an indicator equal to one if the firm's two-year average of pre-tax income (estimated taxable income), scaled by beginning of year total assets, is in the highest annual tercile, and zero otherwise. I use the tercile specification and a two-year average to better identify firms more likely to generate persistently high levels of taxable income and thus, have high capacity to

utilize both new and existing tax benefits.[15] I estimate a modified version of Equation (2), adding *High Profit* and its interaction with *TRA* as additional covariates.

Table 6 presents the results of this analysis. The main effect of *TRA* is negative and significant ($p < 0.01$) using either proxy for high profitability, suggesting that TRA firms with relatively low profitability spend significantly less on R&D. Conversely, the interaction of *TRA* and *High Profit* is positive and significant ($p < 0.05$) in both specifications, suggesting that the influence of TRAs on R&D investment is significantly attenuated when firms are highly profitable. These results suggest that TRA holders have weaker incentive to discourage tax-advantaged investment when the firm has sufficient profitability to utilize the tax benefits covered by the TRA.

4.5 TRAs and Investment Efficiency

Table 7 presents the results of the test of my second hypothesis, which examines the association between TRAs and investment efficiency. The results of estimating Equation (4) are presented in Column (1). The coefficient on *TRA* is negative and significant ($p < 0.05$), suggesting that TRA firms exhibit relatively lower investment efficiency than non-TRA firms. Thus, I reject the null hypothesis of H2 that TRA firms exhibit no difference in their investment efficiency relative to non-TRA firms. These results are consistent with TRA firms choosing to forgo investment projects that would otherwise provide a positive NPV for public shareholders after incorporating the effect of taxes on future TRA payments.

For completeness and consistency with prior research, I re-estimate Equation (4) but replace the dependent variable with a version of *Invest Efficiency* that incorporates firms' acquisition spending in addition to their R&D and capital expenditures (Biddle et al. 2009). I

[15] Inferences are similar if I define *High Pre Tax Income* and *High Est Tax Income* using firm-year observations above the yearly sample median (untabulated).

present the results of this alternative specification in Table 7, Column (2), which shows similar evidence that TRAs are negatively associated with investment efficiency ($p < 0.05$). Collectively, these findings suggest that the agency conflict created by the TRA leads to less efficient investment spending by TRA firms relative to non-TRA firms.

4.6 TRAs, Underinvestment, and Investment Efficiency

To provide additional insight into my findings for H2, I examine whether TRA firms' inefficient investment policy is due to underinvesting or overinvesting. I follow prior research and estimate Equation (4) after partitioning the sample on an indicator variable, *Underinvest*, which equals one if the sign of the residual generated from estimating Equation (3) by industry-year is negative, and zero if it is positive (Chay et al. 2023; Chen et al. 2011). Firms with a negative (positive) value of the residual are considered to be underinvesting (overinvesting).

Table 8 presents the results. Column (1) shows a negative and significant coefficient ($p < 0.05$) on *TRA* in the subsample of firms that are underinvesting. By contrast, Column (2) shows no significant difference ($p > 0.10$) in investment efficiency in the subsample of firms that are overinvesting. These results are consistent with TRA firms' inefficient spending being concentrated among firms that are underinvesting. This also provides supporting evidence that TRA firms forgo investment projects that would otherwise provide a positive NPV for public shareholders.

5. ADDITIONAL ANALYSES

5.1 TRAs, Tax Advantages, and Capital Investment

The results in Section 4.3 suggest that the presence of a TRA is not significantly associated with firms' capital expenditures. However, as discussed previously, this null result may reflect that TRA holders' incentive to align with public shareholders dominates when the

tax advantages associated with the investment are not sufficiently large. Accordingly, I examine whether the relation between TRAs and capital expenditures varies with the tax advantages associated with the investment opportunity.

The analyses in this subsection serve two purposes. Specifically, they provide additional evidence on whether TRA holders prefer investments that are less likely to delay the realization of covered tax benefits while also testing whether this preference extends beyond R&D to firms' capital investment decisions. If this preference exists, I expect TRA firms to invest more (less) in capital expenditures than non-TRA firms when investments are less (more) tax-advantaged. To test this prediction, I conduct two additional analyses that exploit different sources of variation in the *ex ante* tax advantages of capital investment.

First, I exploit cross-sectional variation in state corporate tax rates by adding the statutory corporate tax rate of the firm's headquarter state (*State STR*) and its interaction with *TRA* as additional covariates to Equation (2). Neoclassical theory predicts that capital investment is negatively associated with corporate tax rates because higher tax rates reduce the investment's expected after-tax return (Hall and Jorgenson 1967). Because covered tax benefits are only realized when the firm has sufficient tax liabilities, TRA holders should have weaker incentives to discourage capital investments in higher-tax environments, where each dollar of taxable income generates a higher tax liability. Accordingly, I expect the negative relation between state tax rates and capital investment to be attenuated for TRA firms, resulting in a positive and significant coefficient on the interaction term between *TRA* and *State STR*.

Table 9, Panel A presents the results from estimating this modified version of Equation (2). Consistent with the theoretical relation between taxes and investment, *State STR* is negative and significant ($p < 0.01$), suggesting that firms without TRAs invest less in capital expenditures

when state tax rates are higher. By contrast, the interaction term between *TRA* and *State STR* is positive and significant ($p < 0.05$), suggesting that the negative relation between state tax rates and capital expenditures is attenuated for TRA firms. This finding is consistent with TRA holders having weaker incentives to discourage capital investment in higher tax environments.

Second, I examine whether the presence of a TRA is associated with smaller fourth quarter spikes in capital investment. Xu and Zwick (2024) argue that firms systematically increase capital spending in the fourth quarter because deduction convention allows firms to claim the same first-year rate of tax deprecation regardless of when the capital investment occurs during the year. As a result, firms can increase the present value of tax depreciation deductions by delaying capital investments until later in the year rather than by investing uniformly throughout the year. Accordingly, fourth quarter spikes in capital investment provide a proxy for firms' propensity to undertake capital investments that accelerate the realization of tax benefits. I expect TRA holders to discourage this pattern of investment because accelerating new tax benefits reduces firms' ability to utilize the TRA's covered tax benefits.

To test the association between TRAs and fourth quarter capital investment spikes, I estimate the following equation by OLS:

$$\begin{aligned} \textit{Capex Q4 Spike}_{i,t} = {} & \theta_0 + \theta_1 \textit{TRA}_{i,t} + \theta \textit{Spike Controls} + \theta \textit{IPO Controls} \\ & + \textit{Industry FE} + \textit{Year FE} + \mu_{i,t} \end{aligned} \tag{5}$$

where the dependent variable equals fourth quarter capital expenditures divided by the average of quarterly capital expenditures from the first quarter to the third quarter (Xu and Zwick 2024). *Spike Controls* is a vector of control variables based on the ones used by Xu and Zwick (2024) and also includes controls for firm's stock of available tax assets.

Table 9, Panel B presents the results of estimating Equation (5). *TRA* is negative and significant ($p < 0.05$), suggesting that TRA firms exhibit smaller fourth quarter spikes in capital

spending relative to non-TRA firms. Combined with the evidence in Panel A, these findings are consistent with TRA holders preferring investments with fewer tax advantages, which are less likely to delay the realization of tax benefits covered by the TRA.

5.2 TRAs and Tax Planning

Next, I examine whether the presence of a TRA influences firms' pursuit of tax planning opportunities. As discussed previously, new tax benefits generated by the firm generally reduce the magnitude of tax savings that a firm can realize from the TRA. Thus, TRA holders should prefer that the firm engage in less tax planning because actions that lower the firm's tax liability reduce the compensation that holders receive from the TRA.

Accordingly, if TRA holders' incentives to discourage tax-advantaged investments extend to their overall tax planning, I predict that TRA firms engage in less tax planning relative to non-TRA firms. I test this expectation by estimating the following equation by OLS:

$$End\ UTB_{i,t} \text{ or } UTB\ Add_{i,t} = \rho_0 + \rho_1 TRA_{i,t} + \rho UTB\ Controls + \rho IPO\ Controls + Industry\ FE + Year\ FE + \upsilon_{i,t} \quad (6)$$

where the dependent variable is either the ending balance of unrecognized tax benefits (*End UTB*) or current year additions to unrecognized tax benefits (*UTB Add*). Using unrecognized tax benefits (UTBs) as a proxy for tax planning is advantageous in the TRA setting because many of the tax benefits commonly covered under a TRA (e.g., amortization or depreciation deductions and net operating losses) are unlikely to meet the criteria to be considered uncertain under ASC 740. As a result, UTBs provide an uncontaminated proxy of the overall amount of tax planning conducted by TRA firms outside the tax benefits covered by the TRA itself. Furthermore, prior studies use UTBs as a proxy for tax planning in other settings (e.g., Acito and Nessa 2022). I include a set of control variables predictive of firms' UTB balance (*UTB Controls*) as well as

industry and year fixed effects, following prior research (Cazier et al. 2015; Rego and Wilson 2012).

Table 10 presents the results of estimating Equation (6). In Column (1), I find that TRA firms have significantly lower ending balances in their UTB reserve ($p < 0.01$). Likewise, in Column (2), I find that TRA firms also have significantly fewer current additions to UTB ($p < 0.05$).[16] Both results suggest that TRA firms engage in significantly less tax planning than non-TRA firms. Combined with the findings of my investment analysis, these tax planning results support a tax-based explanation for TRA firms' real investment, specifically that TRA holders have incentives to discourage the pursuit of tax-advantaged activities.

5.3 TRAs and Takeover Likelihood

As a supplemental analysis, I examine whether the adoption of a TRA is associated with the likelihood of takeover. This analysis is motivated by the TRA's payment terms, which often include an early termination provision that accelerates remaining TRA payments upon a change of control (Jacobs 2024; Kupicec et al. 2024). This clause creates a powerful financial incentive for TRA holders to solicit and accept takeover bids, consistent with prior research showing that takeover-contingent compensation increases acquisition likelihood (Bebchuk et al. 2014; Fich et al. 2013). At the same time, accelerating TRA payments also increases the expected cost of an acquisition for prospective bidders, potentially deterring takeover attempts in a manner similar to a poison pill (Field and Karpoff 2002; Ryngaert 1988; Solomon Partners 2025). Because of these competing forces, the influence of TRA adoption on takeover likelihood is ultimately an empirical question.

[16] The results in Table 10 are robust to estimating Equation (6) by Tobit regression rather than OLS to account for censoring of the dependent variable at zero (untabulated).

To examine this question, I estimate the following equation by logistic regression at the IPO-level:

$$\Pr(Acquired_j = 1) = f(\gamma_0 + \gamma_1 TRA\_IPO_j + \gamma Takeover\ Controls + \gamma IPO\ Controls + IPO\ Year\ FE) \quad (7)$$

where *Acquired* is an indicator variable equal to one if the IPO firm is acquired within three years of the firm's IPO date, and zero otherwise (e.g., Kooli et al. 2022; Hsieh et al. 2011). *Takeover Controls* is a vector of control variables measured in the year of the IPO and are adapted from the standard variables used in Field and Karpoff (2002)'s model of acquisition likelihood for IPO firms. I also include the TRA adoption determinants (*IPO Controls*) and IPO year fixed effects (*IPO Year FE*).[17] I estimate Equation (7) for a sample of IPOs from 2005 to 2022 with available data to construct the variables used in the regression model.[18] I present details of the sample selection in Table 11, Panel A.[19]

Table 11, Panel B presents the results of estimating Equation (7). Columns (1) and (3) report the results without and with entropy balancing, respectively. In both specifications, *TRA* is positive and significant ($p < 0.01$ and $p < 0.05$, respectively), suggesting that TRA adoption is associated with a higher likelihood of takeover. Using the marginal effects presented in Columns (2) as a baseline, firms that adopt a TRA at IPO are associated with a 9% increase in takeover likelihood relative to non-adopters. These results are consistent with the change-of-control clause incentivizing TRA holders to influence the firm to accept a takeover bid.

[17] Results are robust to the inclusion of industry (by Fama-French 48 classification) fixed effects and/or the use of a linear probability model (untabulated).
[18] IPOs in 2004 are dropped from the sample because there is no variation in *Acquired* for sample IPO firms that year. The sample ends in 2022 to allow for a full three-year post-IPO window to construct *Acquired* (the last full year of M&A data available is 2025, as at the time of writing).
[19] The mean of *Acquired* is 0.12, suggesting that 12% of sample firms are acquired within three years of their IPO. This percentage is similar to the 11.34% reported by Kooli et al. (2022) for IPOs conducted between 1980 and 2013 using the same three-year post-IPO window.

6. CONCLUSION

TRAs are contracts that allow a firm's initial investors to share in a specified set of future tax savings realized by the firm. However, despite the increasing economic importance of TRAs among newly public firms (Houlihan Lokey 2023), little is known about how these contracts influence firms' real activities, an important gap in the literature given the potential agency conflict that exists between TRA holders and public shareholders. This study fills this gap in the literature, at least in part, by examining how the incentives created by the TRA's unique payment structure influence firms' investment behavior.

My findings suggest that the incentives created by TRAs discourage firms from pursuing tax-advantaged investments. Specifically, I find that the presence of a TRA is associated with lower levels of R&D investment. Furthermore, I find that TRA firms' investment spending is less efficient than that of their non-TRA peers, consistent with the agency conflict between TRA holders and public shareholders. Collectively, my findings suggest that the incentives created by TRAs influence firms' investment policy. From a broader perspective, my findings suggest that TRAs reduce innovation by lowering TRA holders' incentives to invest in R&D, a heavily tax-advantaged activity.

My study makes several notable contributions. First, it contributes to the literature on TRAs by examining the influence of TRAs on firms' real activities. Second, it contributes to research on the managerial incentives for tax planning by identifying a prominent contractual arrangement that discourages firms from engaging in tax-minimizing activities. Given the growing prevalence of TRAs in public markets, these findings should be of interest to policymakers because tax incentives designed to encourage corporate investment may not work as intended for firms with TRAs.

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Appendix A: Technical Background of Tax Receivable Agreements

A.1. The Mechanics of the TRA

A.1.1 TRA Parties and Covered Tax Benefits

A TRA is a contract between two parties: (1) the firm and (2) the TRA holders, who are typically composed of some or all the firm's pre-IPO owners. As part of a firm's IPO process, the TRA is entered into by the two parties, resulting in the TRA taking effect immediately following the firm's IPO. A TRA requires the firm to compensate the TRA holders for the firm's utilization of specific tax benefits covered by the contract ("covered tax benefits"). The parties select which tax benefits are covered by the TRA among the firm's existing tax attributes at the time of the IPO. This often includes any tax credits, deductions, or loss carryforwards. Although the covered tax benefits can be customized to suit the parties' interests, basis deductions (e.g., future amortization or depreciation on the tax basis of an asset) and net operating losses are historically the most common source of covered tax benefits (Greenwood et al. 2018).

Once the tax benefits to be covered by the TRA have been agreed upon, the parties select a sharing percentage, which stipulates the percentage of the tax savings required to be paid to the TRA holders when the firm utilizes the covered tax benefits in the post-IPO period. Sharing percentages can vary, but the vast majority of TRAs specify 85% as the percentage of the savings to be paid to TRA holders (Edwards et al. 2019). The firm is required to make annual payments to TRA holders ("TRA payments") equal to the sharing percentage multiplied by the magnitude of tax savings that the firm realizes in each year following the IPO. For example, suppose that in the current year the firm realized $10 million in tax savings from utilizing the covered benefits. In this situation, the firm would owe aggregate TRA payments of $8.5 million

to the TRA holders. TRA payments are made by the firm until either (1) the covered tax benefits are fully utilized, or (2) an early termination clause is triggered, whichever comes first.

A.1.2 Computation of TRA Payments

The annual TRA payment is computed using a "with and without" calculation (Paul and Sabbah 2013). This means that the firm performs two calculations of its annual tax liability: a "with" and a "without" calculation. Under the "with" calculation, the firm calculates its tax liability normally, utilizing any available tax benefits, including covered tax benefits, to reduce its tax liability. Under the "without" calculation, the firm calculates its tax liability as if the covered tax benefits do not exist. The difference between the calculated tax liabilities represents the savings realized by the firm from using the tax benefits covered by the TRA, of which 85% is remitted to TRA holders under standard contract terms (Greenwood et al. 2018; Paul and Sabbah 2013).

To illustrate the with and without calculation, consider the following numerical example. Assume the following facts: (1) the firm has $100 of income; (2) the firm has a covered tax benefit of $20 in deductions; and (3) the firm has the following non-covered tax benefits: $40 in deductions. In total, the firm has $60 in deductions ($20 covered and $40 non-covered). The "with" and "without" calculation is presented in Table A.1.

Under the "with" calculation, the firm utilizes both the covered and non-covered deductions, reducing taxable income to $40. At a 21% corporate tax rate, this results in a tax liability of $8.40 under the "with" calculation. Under the "without" calculation, the firm must assume that the $20 covered deduction does not exist. Therefore, the firm is only able to utilize the non-covered deduction of $40, reducing taxable income to $60. At a 21% corporate tax rate, this results in a tax liability of $12.60 under the "without" calculation. The tax savings from the

TRA in this example are $4.20 ($12.60 - $8.40). Assuming a sharing percentage of 85%, $3.57 ($4.20 x 85%) would be paid to TRA holders.

Table A.1
"With" and "Without" Calculation

	With	Without
Total income	100.00	100.00
Deduction ($20 of covered benefits)	(60.00)	(40.00)
Taxable income	40.00	60.00
Tax rate	21%	21%
Tax liability	8.40	12.60
Tax liability: "With" calculation		8.40
TRA tax savings		4.20

Practitioners point out that the "with and without" calculation imposes that the firm's tax benefits *not* covered by the TRA are used first (Greenwood et al. 2018; Paul and Sabbah 2013). This ordering effect arises when a firm does not earn sufficient taxable income in a single year to utilize all available covered and non-covered tax benefits. In these situations, every dollar of tax savings realized from using non-covered tax benefits reduces the tax savings realized from using covered tax benefits, lowering the magnitude of the TRA payment in that year.

Consider the following numerical example to illustrate the ordering effect of the "with" and "without" calculation. Assume two scenarios, both of which have the same facts as in Table A.1, except that the firm now has $10 of tax credits in Scenario 1 and $11 of tax credits in Scenario 2. The tax credits are non-covered tax benefits. In both scenarios, the firm still has $60 worth of deductions, of which $20 is covered and $40 is non-covered. The with and without calculations are presented in Table A.2 below:

Table A.2
The Ordering Effect of the "With" and "Without" Calculation

	Scenario 1		Scenario 2	
	With	**Without**	**With**	**Without**
Total income	100.00	100.00	100.00	100.00
Deduction ($20 of covered benefits)	(60.00)	(40.00)	(60.00)	(40.00)
Taxable income	40.00	60.00	40.00	60.00
Tax rate	21%	21%	21%	21%
Tax liability	8.40	12.60	8.40	12.60
Tax credits	(10.00)	(10.00)	(11.00)	(11.00)
Net tax liability	0.00	2.60	0.00	1.60
Net tax liability: "With" calculation		0.00		0.00
TRA tax savings		2.60		1.60

In Scenario 1, the firm does not have sufficient income to utilize both the covered and non-covered tax benefits available to the firm. This can be seen under the "with" calculation in which the firm's tax liability is reduced to zero and a portion of the non-covered tax credits are not fully utilized. Conversely, under the "without" calculation, the firm has a tax liability of $2.60 because the firm must assume that the $20 covered tax benefit deduction does not exist. Thus, the firm realizes $2.60 of tax savings from using covered tax benefits in Scenario 1.

In Scenario 2, the firm now has $11 of non-covered tax credits but all other facts are the same as in Scenario 1. Under the "with" calculation, the firm's tax liability remains at zero because the firm does not have sufficient income to utilize both the covered and non-covered tax benefits available to the firm. Under the "without" calculation, the firm computes a tax liability of $1.60. Thus, the firm realizes $1.60 of tax savings from using covered tax benefits in Scenario

2. The tax savings in Scenario 1 exceed those of Scenario 2 by $1.00 because the firm utilizes more non-covered tax benefits ($1 more of tax credits) in Scenario 2 than in Scenario 1. Thus, TRA holders receive a larger TRA payment in Scenario 1 than in Scenario 2.

The ordering effect arises when the firm does not earn sufficient income to absorb both covered and non-covered tax benefits. For example, in Scenario 1, the $40 of non-covered deduction and $10 of non-covered tax credits are applied first to reduce the firm's tax liability. Although the covered tax deduction of $20 can reduce up to $4.20 in tax liabilities ($20 x 21%), the "without" calculation shows that the firm only has $2.60 remaining in tax liabilities with which to utilize the remaining covered tax benefits. This results in $1.60 of tax savings ($4.20 - $2.60) that TRA holders do not receive the opportunity to share in. When the amount of non-covered benefits is increased in Scenario 2, the firm realizes even less tax savings from utilizing the covered tax benefits. Thus, non-covered tax benefits "crowd-out" the utilization of covered tax benefits.

A.1.3 Early Termination

A TRA can be terminated before the full utilization of the covered tax benefits—these events are often referred to as early termination. Early termination can occur in one of two ways. First, the firm and the TRA holders can mutually agree to an early termination. In this case, the TRA requires the firm to make an early termination payment, which is generally equal to the present value of all expected future TRA payments. The early termination payment is computed using contractually-specified assumptions, which are typically favorable to the TRA holders, disincentivizing firms from undertaking an early termination of the TRA (Greenwood et al. 2017). For example, the calculation of the early termination payment commonly assumes that the

firm will earn sufficient future taxable income to fully utilize all available covered tax benefits on an annual basis (Greenwood et al. 2023).

Second, most TRAs automatically terminate if a certain event occurs that triggers an early termination clause in the contract. A common example of this is when a TRA firm undergoes a change of control. Most TRAs include a clause that requires the firm to make an early termination payment to TRA holders upon a change of control, resulting in the termination of the TRA (Greenwood et al. 2023). Early termination payments upon change of control are also typically calculated using favorable assumptions to the TRA holders. However, in an M&A deal, the parties may negotiate a reduced early termination payment to facilitate a higher acquisition price (Greenwood et al. 2017; Jacobs 2024).

A.2. The Incentives to Enter a TRA

A.2.1 Pre-IPO Owners' Incentives

The primary incentive for pre-IPO owners to enter a TRA is to monetize the tax benefits of the firm. This incentive is consistent with the views held by many practitioners, legal scholars, and commentators, who believe that public markets do not assign full value to tax benefits held by the firm (Lee 2024; Levine 2024; Paul and Sabbah 2013; Shobe 2018). There are two explanations put forth to support this view. First, public company valuations are typically based on revenue or EBITDA, both of which are unaffected by taxes and therefore do not reflect any future savings a firm may realize from utilizing tax benefits (Lee 2024; Paul and Sabbah 2013). This valuation technique is especially common for IPO firms that do not have a history of being profitable. Second, public investors may not fully understand how to appropriately value a firm's tax assets. This argument is based on the difficulty of valuing tax benefits when their utilization is contingent on uncertain future events such as the realization of taxable income (Paul and

Sabbah 2013). Thus, pre-IPO owners are more likely to enter a TRA when they believe public markets will not fully compensate them for the value of the tax assets held by the firm.

A secondary incentive for pre-IPO owners to enter a TRA is specific to supercharged IPOs, which I discuss in section A.3 of this appendix. When a firm undergoes the pre-IPO reorganization for the supercharged IPO, pre-IPO owners incur tax on the exchange of their passthrough ownership interests for public company shares. Thus, TRA payments may be viewed as compensation to pre-IPO owners for incurring an upfront tax cost to deliver tax benefits to the firm (Paul and Sabbah 2013). Accordingly, pre-IPO owners have incentive to enter a TRA to increase the likelihood that they receive payment to offset the tax cost of the pre-IPO reorganization.

A.2.2 The Firm's Incentives

The firm's primary incentive to enter a TRA is to align the interests of the pre-IPO owners with those of public shareholders (Edwards et al. 2019). Consistent with this incentive, prior research finds that firms use lockup arrangements as a commitment mechanism to reduce moral hazard problems by maintaining insiders' interests in the firm (Brav and Gompers 2003). Similarly, Edwards et al. (2019) characterize TRAs as a commitment mechanism because payments made to TRA holders are a function of taxable income, incentivizing TRA holders to influence firm actions to maximize firm profitability. Because TRA holders often comprise individuals who retain significant influence over the firm's actions (e.g., founders, management, private equity firms), new public shareholders of the firm seek to incentivize these individuals to exert effort to maximize firm value. Accordingly, firms have the incentive to enter a TRA to retain the commitment of pre-IPO owners to maximize firm value, aligning the interests of pre-IPO owners with those of public shareholders.

A.3. The Supercharged IPO

Although TRAs can be used to cover a wide range of different tax benefits, they are commonly used by firms that intentionally undergo a pre-IPO reorganization to generate future basis deductions. These types of IPOs are known as "supercharged IPOs." Because a majority of TRAs are created in conjunction with a supercharged IPO, I provide a high level overview of the steps involved in the supercharging reorganization.

Private firms that wish to publicly list on a U.S. stock exchange traditionally organize as C corporations to meet regulatory requirements for the IPO. However, many private firms operate as passthrough entities, such as partnerships or LLCs, requiring a pre-IPO reorganization to convert the passthrough structure to a C corporation prior to the IPO. In these cases, a private firm organized as a passthrough entity (hereafter "Opco") may undergo a supercharged reorganization to accomplish this conversion to a C corporation. The steps to this reorganization are as follows.

First, a shell C corporation is created to ultimately issue shares to the public as part of the IPO. Although not a necessary condition for the reorganization, the C corporation is typically organized to allow for the issuance of two different classes of shares (e.g., dual class): one class of shares offered to the public with standard voting and economic rights and one class not offered to the public with super-voting rights and little to no economic rights. Second, an IRC §754 election is made to trigger a step-up in the basis of the assets held by Opco when the passthrough ownership interests of Opco are sold by the pre-IPO owners. A §754 election is made by a passthrough entity and results in a basis adjustment to the assets held by the entity when either a property distribution or a transfer of a partnership interest occurs (Rodrigues 2020). Third, the pre-IPO owners exchange some or all their passthrough ownership interests in

Opco (e.g., partnership units or LLC units) for shares in the C corporation. The pre-IPO owners typically receive shares with super-voting rights such that they maintain voting control of the firm after the IPO.

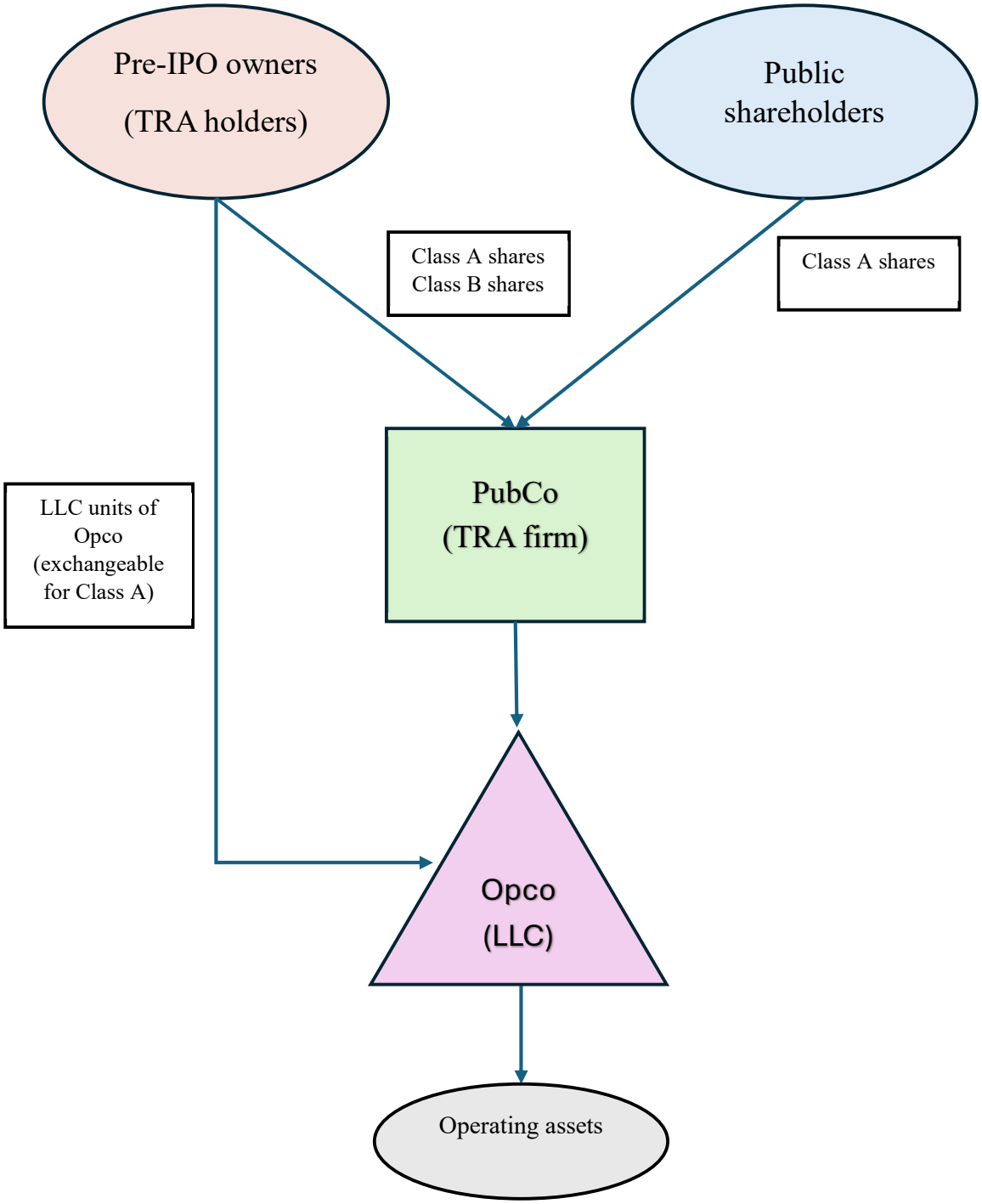
The result of the reorganization is that the shell C corporation directly owns passthrough ownership interests in Opco and the pre-IPO owners own shares in the shell C corporation. Importantly, the exchange of passthrough ownership interests for C corporation shares triggers a step-up in the basis of the assets held by Opco to fair market value pursuant to IRC §743(b), provided the §754 election is in effect. This step-up in basis is not available in traditional IPOs and is the primary distinction between the supercharged IPO and the traditional IPO (Edwards et al. 2019). The organizational structure of the firm after the reorganization is depicted in Figure 1 below and is commonly known as an umbrella partnership corporation ("Up-C").[20]

There are two important tax effects of the step-up in the basis of the assets held by Opco. First, the increase in basis provides an increase to the future depreciation and/or amortization available to the firm to deduct against its future taxable income. Because a significant portion of the pre-IPO firm's value is often embedded in goodwill, the step-up in basis of goodwill typically produces the largest future tax benefit in a supercharged IPO (Andersen Tax 2016; Shobe 2018).

Second, the exchange of passthrough ownership interests triggers taxable gains to the pre-IPO owners at capital gains rates. However, because the tax rate applicable to the future tax benefits created in the step-up (e.g., corporate tax rate—21%) exceeds the tax rate applicable on the gains realized by the pre-IPO owners (e.g., long-term capital gains rate—15%), the exchange

[20] Although less common than the Up-C structure, a firm can alternatively supercharge its IPO by making a §338(10)(h), which also steps-up the tax basis of the assets of Opco. However, a §338(10)(h) election requires additional conditions to be met and is taxed as an asset sale, reducing the tax efficiency of the transaction relative to a reorganization that results in the Up-C structure (Edwards et al. 2019; Shobe 2017).

Figure 1: Example of Resulting Organizational Structure in a Supercharged IPO



This figure presents a simplified example of the resulting organizational structure of a firm that undergoes a supercharged IPO. Practitioners refer to this structure as an umbrella partnership corporation (Up-C). Class A shares of Pubco are typically offered to the general public in the IPO. The pre-IPO owners generally hold two classes of Pubco shares. The Class B shares typically have supervoting rights but little to no economic rights. The pre-IPO owners may also continue to hold LLC units of Opco (passthrough entity) in the post-IPO period. The pre-IPO owners are entitled to exchange their LLC units for Class A shares of Pubco, triggering a step-up in the basis of the operating assets held by Opco.

transaction generally creates a net benefit to pre-IPO owners on the difference in tax rates (Edwards et al. 2019; Fleischer and Staudt 2014; Shobe 2017).

As previously noted, pre-IPO owners may not exchange all their passthrough ownership interests in Opco at the time of the IPO. In these cases, the pre-IPO owners may instead choose to sell or exchange their interests over time, deferring the tax on the sale of their interests to the post-IPO period. Assuming the §754 election remains in place, any post-IPO sales or exchanges will still trigger a step-up in the basis of the assets of Opco in the post-IPO period. This is common, for example, if the firm intends to use the proceeds from the IPO to purchase the ownership interests held by the pre-IPO owners.

Adopting a TRA in conjunction with the supercharged IPO is attractive because the TRA provides a future stream of compensation to pre-IPO owners who pay immediate tax on the gains realized from the exchange of their passthrough ownership interests. Because the supercharging transaction delivers tax benefits to the firm, the TRA is an effective contracting mechanism to link pre-IPO owners' future compensation to the utilization of the tax benefits generated by the reorganization. Consequently, the large majority of firms that undergo a pre-IPO reorganization to step-up the tax basis of Opco's assets will also adopt a TRA as part of the IPO process (Billings et al. 2023; Edwards et al. 2019). However, it is important to note that the use of a TRA is not conditional on the use of any pre-IPO transaction that results in a step-up in tax basis. As stated previously, the TRA can be adopted to cover a wide range of tax benefits other than basis deductions, regardless of whether the firm undergoes a supercharged IPO.

A.4. Accounting for a TRA

Accounting for the effect of the TRA involves recording journal entries for the following transactions: (1) recording the tax benefit at IPO, (2) recording the contingent liability of the

TRA at IPO, and (3) recording TRA payments each year in the post-IPO period. The following example assumes that the TRA covers a basis deduction from a supercharged IPO worth $100 in future tax savings, and the sharing percentage is 85%. The journal entries for the three transactions are as follows[21]:

(1)	Deferred tax asset	100	
	APIC (or other equity account)		100
	Record tax benefit from step-up in tax basis.		
(2)	APIC (or other equity account)	85	
	TRA liability		85
	Record TRA contingent liability (85% of future tax benefit).		
(3)	TRA liability	6	
	Cash		6
	Record TRA payment.		

The step-up in the tax basis is recorded as a credit entry to additional paid-in capital (APIC) because the tax benefit is associated with the exchange of equity interests held by the pre-IPO owners. However, if a supercharged IPO was not involved, the firm should already have a deferred tax asset recorded on the balance sheet for the tax benefits covered in the TRA, and, therefore, the first journal entry would be omitted.

At the time of the IPO, the firm will recognize a contingent liability for the TRA equal to the sharing percentage multiplied by the expected future tax savings to be realized from utilizing the TRA's covered tax benefits. The debit portion of the entry is typically recorded to APIC or another equity account in the case of a supercharged IPO to reflect payment to pre-IPO owners.

[21] The journal entries in this section of the appendix are based on guidance from the Deloitte Accounting Research Tool (DART) on TRAs (Deloitte n.d.). The guidance is available at: https://dart.deloitte.com/USDART/home/codification/presentation/asc230-10/roadmap-statement-cash-flow/chapter-7-common-issues-related-cash/7-14-tax-receivable-agreements.

As TRA payments are made over time, the firm will draw down the TRA liability by recording an entry to reflect the cash payment to TRA holders.

In many cases, a firm may not meet the "more likely than not" requirement under ASC 740 to record the full value of the deferred tax asset. In these cases, the firm records journal entry number (1) above to recognize the tax benefit but does not record any contingent liability for the TRA. Instead, the firm records a valuation allowance as follows:

APIC (or other equity account)	100	
Valuation allowance		100
Record valuation allowance.		

If the covered tax benefits did not arise from a step-up associated with a supercharged IPO, the debit portion of the above entry to record the valuation allowance may be recorded to deferred tax expense (e.g., if the tax benefit is a net operating loss). If in a future year the valuation allowance is reversed, the firm will make the following entries to release the valuation allowance and record the corresponding change to the TRA liability:

Valuation allowance	100	
Deferred tax expense		100
Record the release of the valuation allowance		

Loss on remeasurement	85	
TRA liability		85
Record corresponding change to the TRA liability.		

A firm may separately disclose the value of the outstanding TRA liability in the balance sheet, assuming the value is material to warrant a separate line item. Although the cash flow impact of TRA payments will be reflected in the cash flow statement, such payments will not be reflected as an expense in the income statement. Instead, only adjustments associated with changes to the value of the TRA's covered tax benefits after initial recognition are reflected in the income statement.

Appendix B. Variable Definitions

Variable	Definition	Data Source
TRA and Dependent Variables		
TRA	An indicator variable equal to 1 if the firm has an existing tax receivable agreement at the end of the fiscal year, and 0 otherwise.	Hand-collected from SEC EDGAR
TRA IPO	*An* indicator variable equal to 1 if the firm adopts a tax receivable agreement, and 0 otherwise.	Hand-collected from SEC EDGAR
R&D	Research and development expenses (XRD) divided by beginning of year total assets (AT). Missing values are set equal to 0.	Compustat
Capex	Capital expenditures (CAPX) divided by beginning of year net property, plant, and equipment (PPENT).	Compustat
Total Invest	The sum of R&D (XRD) and capital expenditures (CAPX), less the sale of property, plant, and equipment (SPPE), divided by beginning of year total assets (AT).	Compustat
Invest Efficiency	The absolute value of the residuals from estimating Equation (3) by industry-year, multiplied by negative one. Industry is defined by Fama-French 48 classification. A minimum of 20 observations per industry-year is required.	Compustat
Capex Q4 Spike	Capital expenditures in Q4 divided by the average of capital expenditures from Q1 to Q3. Following Xu and Zwick (2024), values greater than 500% are reset to 500%. Negative values are reset to zero.	Compustat
End UTB	Ending balance of unrecognized tax benefits (TXTUBEND) divided by total assets (AT), multiplied by 100.	Compustat
UTB Add	Increases to current tax positions in unrecognized tax benefits (TXTUBPOSINC) divided by total assets, multiplied by 100.	Compustat
Acquired	An indicator variable equal to 1 if the IPO firm is acquired within three years of the IPO date, and 0 otherwise.	LSEG's SDC
IPO-Level Determinants of TRA		
Size Pre	The natural logarithm of total assets (AT) in the year immediately preceding the IPO date.	Compustat
PTI Pre	Pre-tax income (PI) divided by total assets (AT) in the year immediately preceding the IPO date.	Compustat
Lev Pre	Total liabilities (LT) divided by total assets in the year immediately preceding the IPO date.	Compustat
Net DTA Pre	Net deferred tax assets (liabilities) (TXNDB) divided by total assets in the year immediately preceding the IPO date.	Compustat
Intan Pre	Intangible assets (INTAN) divided by total assets in the year immediately preceding the IPO date.	Compustat
Big 4 Pre	An indicator equal to 1 if the auditor code (AU) is either Deloitte, EY, PwC, or KPMG, and 0 otherwise.	Compustat

NY Law	An indicator variable equal to 1 if the headquarters of the law firm used by the firm in its IPO is in New York, and 0 otherwise.	LSEG's SDC
Dual Class	An indicator variable equal to 1 if the share structure of the firm at IPO is dual class, and 0 otherwise.	Jay Ritter's website, SEC EDGAR
SPAC	An indicator variable equal to 1 if the business description of the IPO firm indicates that it is a special purpose acquisition corporation or blank check company, and 0 otherwise.	LSEG's SDC
VC Back	An indicator variable equal to 1 if the IPO firm is venture capital backed, and 0 otherwise. For firms that go public via SPAC merger, a firm is considered venture capital backed if the target entity had at least one seed, series, or venture financing round from a venture capital firm prior to the SPAC merger according to data from Crunchbase.	Jay Ritter's website, Crunchbase LSEG's SDC
PE Back	An indicator variable equal to 1 if the IPO firm is private equity backed, and 0 otherwise. For firms that go public via SPAC merger, a firm is considered private equity backed if the target entity had at least one private equity financing round prior to the SPAC merger according to data from Crunchbase.	Crunchbase, LSEG's SDC
Control and Other Variables		
Age	The natural logarithm of the number of years that the firm has existed on Compustat as of the current year.	Compustat
BHAR IPO	The buy-and-hold abnormal stock return in the year of the IPO, calculated as the sum of monthly stock returns adjusted for the CRSP value-weighted index. A minimum of one month of returns is required.	CRSP
Cash	Cash and cash equivalents (CHE) divided by beginning of year total assets (AT).	Compustat
CFO Sales	Cash flow from operations (OANCF) divided by total sales (SALE).	Compustat
Chg NOL	The tax loss carryforward balance in year *t* minus the tax loss carryforward balance in year *t-1*, divided by beginning of year total assets (AT).	Compustat
Disc Accruals	The residuals estimated from regressions of the Modified Jones Model estimated by industry-year. The Modified Jones Model is supplemented with a control for performance, following Kothari et al. (2005).	Compustat
Div	An indicator variable equal to 1 if the firm paid a dividend in the year (DVC or DV > 0), and 0 otherwise.	Compustat
DTA	Net deferred tax assets (TXNDBA) divided by beginning of year total assets (AT).	Compustat
DTL	Net deferred tax liabilities (TXNDBL) divided by beginning of year total assets (AT).	Compustat

Efficiency Controls	A vector of control variables that includes: *Size*, *Tobin's Q*, *Tangibility*, *K-Structure*, *Ind K-Structure*, *CFO Sales*, *Slack*, *Div*, *Age*, *Loss*, *Cash*, *Z-Score*, *Operating Cycle*, *DTA*, *DTL*, *NOL*, *Chg NOL*, and *Foreign*.	Compustat
Foreign	Foreign income (PIFO) divided by beginning of year total assets (AT). Missing values are set equal to 0.	Compustat
Foreign Sales%	Foreign sales divided by total sales (SALE). Missing values are set equal to 0.	Compustat
Growth IPO	Sales (SALE) in the year of the IPO minus sales in the year prior to the IPO, divided by sales in the year prior to the IPO.	Compustat
High Est Tax Income	An indicator variable equal to 1 if the two year average of estimated taxable income from year *t-1* to year *t*, scaled by beginning of year total assets is in the top tercile, by year, and 0 otherwise. Estimated taxable income is computed as the sum of federal tax expense (TXFED) and foreign tax expense (TXFO) divided by the federal statutory tax rate, minus the change in the tax loss carryforward (TLCF). Missing values of deferred tax (TXDI) and foreign tax expense (TXFO) are set equal to 0. Missing values of TXFED are replaced with the difference between total tax expense and the sum of deferred tax expense and foreign tax expense (Ayers et al. 2009).	Compustat
High Pre Tax Income	An indicator variable equal to 1 if the two year average of pre-tax income (PI) from year *t-1* to year *t*, scaled by beginning of year total assets is in the top tercile, by year, and 0 otherwise.	Compustat
High Profit	Either *High Pre Tax Income* or *High Est Tax Income*.	Compustat
Ind K-Structure	The industry average of long-term debt (DLTT) divided by the sum of long-term debt and the market value of equity (PRCC_F x CSHO). Industry is defined by 3-digit SIC classification (SICH).	Compustat
Invest Controls	A vector of control variables that includes: *Size*, *Lev*, *PTROA*, *MTB*, *Sales Growth*, *Cash*, *Div*, *CFO Sales*, *Age*, *Loss*, *DTA*, *DTL*, *NOL*, *Chg NOL*, and *Foreign*.	Compustat
IPO Controls	A vector of control variables that includes: *Size Pre*, *PTI Pre*, *Lev Pre*, *Net DTA Pre*, *Intan Pre*, *Big 4 Pre*, *NY Law*, *Dual Class*, *SPAC*, *VC Back*, and *PE Back*.	Compustat, Crunchbase, SEC EDGAR, Jay Ritter's website, LSEG's SDC
K-Structure	Long-term debt (DLTT) divided by the sum of long-term debt and the market value of equity (PRCC_F x CSHO).	Compustat
Lev	Sum of long-term debt (DLTT) and debt in current liabilities (DLC), divided by total assets (AT).	Compustat
Lev IPO	Sum of long-term debt (DLTT) and debt in current liabilities (DLC), divided by total assets (AT) in the year of the IPO.	Compustat
Liquidity IPO	Current assets (ACT) minus current liabilities (LCT), divided by total assets in the year of the IPO.	Compustat

Loss	An indicator variable equal to 1 if the firm has negative net income (NI) in the year, and 0 otherwise.	Compustat
MTB	The market value of equity (PRCC_F x CSHO) divided by the book value of equity (CEQ).	Compustat
Neg Growth	An indicator variable equal to 1 if *Sales Growth* is negative, and 0 otherwise.	Compustat
NOL	An indicator variable equal to 1 if the tax loss carryforward (TLCF) variable is nonzero and nonmissing, and 0 otherwise.	Compustat
Operating Cycle	The natural logarithm of the sum of: (1) Receivables (RECT) divided by sales (SALE) and (2) Inventory (INVT) divided by cost of goods sold (COGS), multiplied by 360.	Compustat
PP&E IPO	Net property, plant, and equipment (PPENT), divided by total assets in the year of the IPO.	Compustat
PTROA	Pre-tax income (PI) divided by beginning of year total assets (AT).	Compustat
Sale Q4 Spike	Total sales in Q4 divided by the average of total sales from Q1 to Q3. Following Xu and Zwick (2024), values greater than 500% are reset to 500%. Negative values are reset to zero.	Compustat
Sales Growth	Sales (SALE) in year *t* minus sales in year *t-1*, divided by sales in year *t-1*.	Compustat
SG&A	Sales, general, and administrative expense (XSGA) divided by total assets (AT). Missing values are set equal to 0.	Compustat
Size	The natural logarithm of total assets (AT).	Compustat
Size IPO	The natural logarithm of total assets (AT) in the year of the IPO.	Compustat
Slack	Cash and cash equivalents (CHE) divided by net property, plant, and equipment (PPENT).	Compustat
Spike Controls	A vector of control variables that includes: *Tax Status*, *Size*, *Tobin's Q*, *Cash, Capex*, *Sale Q4 Spike*, DTA, *DTL*, *NOL*, *Chg NOL*, and *Foreign*.	Compustat
State STR	The state-level statutory tax rate in the firm's headquartered state, expressed in percentage points.	Glaeser and Yoo (2024), Tax Foundation
Takeover Controls	A vector of control variables that includes: *Size IPO*, *Lev IPO*, *Tobin's Q IPO*, *PP&E IPO*, *Liquidity IPO*, *Growth IPO*, and *BHAR IPO*.	Compustat, CRSP
Tangibility	Net property, plant, and equipment (PPENT), divided by total assets (AT).	Compustat
Tax Status	An indicator variable equal to 1 if the estimated taxable income is positive, and 0 otherwise. Estimated taxable income is computed as the sum of federal tax expense (TXFED) and foreign tax expense (TXFO) divided by the federal statutory tax rate, minus the change in the tax loss carryforward (TLCF). Missing values of deferred tax (TXDI) and foreign tax expense (TXFO) are set equal to 0. Missing values of TXFED are replaced with the difference between total tax expense (TXT) and the sum of deferred tax expense and foreign tax expense (Ayers et al. 2009).	Compustat

Tobin's Q	The market value of assets divided by the book value of assets (AT). The market value of assets is calculated as total assets (AT) minus the book value of equity (CEQ) plus the market value of equity (PRCC_F x CSHO).	Compustat
Tobin's Q IPO	The market value of assets divided by the book value of assets (AT) in the year of the IPO. The market value of assets is calculated as total assets (AT) minus the book value of equity (CEQ) plus the market value of equity (PRCC_F x CSHO).	Compustat
Underinvest	An indicator variable equal to 1 if the residuals from estimating Equation (3) by industry-year is negative, and 0 if positive.	Compustat
UTB Controls	A vector of control variables that includes: *PTROA*, *Size*, *Foreign Sales%*, *R&D*, *Lev*, *Disc Accruals*, *SG&A*, *MTB*, *Sales Growth*, *DTA*, *DTL*, *NOL*, *Chg NOL*, and *Foreign*.	Compustat
Z-Score	Altman's z-score, calculated as [3.3 x pre-tax income (PI)] + [sales (SALE)] + [1.4 x retained earnings (RE)] + [1.2 x difference between current assets (ACT) and current liabilities (LCT)], all divided by total assets (AT) (Altman 1968).	Compustat

Table 1
Sample Selection

Panel A: IPO and Firm-Year Sample

	IPOs	Firm-years	TRA Firm-years
U.S. IPO firms from 2004 to 2023 with offer price of at least $5.00	4,290		
Less: IPO firms not matched to Compustat	(1,293)		
Less: IPO firms with missing variables in Equation (1)	(1,008)		
Less: firms with no Compustat coverage from 2007 to 2023	(75)		
Sample of IPOs before applying firm-year criteria	1,914	12,123	901
Less: firms incorporated or headquartered outside U.S.	(58)	(434)	(19)
Less: firms in financial and utility industries	(266)	(2,111)	(266)
Less: firm-years following a TRA termination during sample period	0	(57)	0
Less: firm-years missing variables to test H1	(263)	(2,210)	(66)
Base sample for IPO-level analysis and Test of H1	**1,327**	**7,311**	**550**
Less: firm-years missing variables to test H2	(123)	(845)	(56)
Base sample for Test of H2	**1,204**	**6,466**	**494**

Panel B: TRA Firm-Year Sample With TRA Holders

	TRA Firm-years
Base Sample of TRA firm-years for Test of H1	550
Less: TRA firm-years missing TRA holder information	(7)
Sample of firm-years with available data on TRA holders	**543**

This table presents the sample selection for the observations used in my empirical analyses. Panel A presents the sample selection criteria for the IPO level sample used to estimate Equation (1) and the firm-year level sample for my tests of H1 and H2. Panel B presents the sample selection criteria for the TRA-firm-year sample used to provide descriptive statistics related to the TRA holders.

Table 2
Descriptive Statistics of TRA Firms

	(1) N	(2) mean	(3) sd	(4) p25	(5) p50	(6) p75
CEO is a TRA holder	543	0.534	0.499	0.000	1.000	1.000
CFO is a TRA holder	543	0.262	0.440	0.000	0.000	1.000
At least one director is a TRA holder	543	0.910	0.287	1.000	1.000	1.000
Chairman of the board is a TRA holder	543	0.589	0.492	0.000	1.000	1.000
At least one C-suite member is a TRA holder	543	0.599	0.491	0.000	1.000	1.000
Number of C-suite members who are TRA holders	543	1.626	1.845	0.000	1.000	3.000
Number of directors who are TRA holders	543	3.068	2.142	2.000	3.000	4.000
Fraction of the board who are TRA holders	543	0.345	0.227	0.182	0.333	0.500
At least one private equity TRA holder	543	0.685	0.465	0.000	1.000	1.000
Number of BoardEx individuals affiliated with a PE TRA holder	543	1.262	1.548	0.000	1.000	2.000

This table presents descriptive statistics of the sample of TRA firm-years with available data on the TRA holders within each firm. Data to identify TRA holders are obtained from TRA contracts and/or the firm's IPO filings. Executive and board level variables presented in this table are constructed using data from BoardEx.

Table 3
Determinants of TRAs

Panel A: Logit Regression				
	(1)	(2)	(3)	(4)
	DV = *TRA IPO*			
	No FE		IPO Year FE	
Variables	Logit Estimation	Marginal Effects	Logit Estimation	Marginal Effects
Size Pre	-0.008	-0.000	-0.075	-0.004
	(-0.09)		(-0.81)	
PTI Pre	0.807***	0.048***	1.018***	0.059***
	(3.25)		(3.35)	
Lev Pre	0.361**	0.021**	0.376**	0.022**
	(2.49)		(2.39)	
Net DTA Pre	3.407	0.202	4.402	0.256
	(1.27)		(1.32)	
Intan Pre	2.015***	0.119***	1.902***	0.111***
	(4.32)		(3.82)	
Big 4 Pre	-0.822***	-0.049***	-0.646**	-0.038**
	(-2.85)		(-2.09)	
NY Law	0.854***	0.051***	1.044***	0.061***
	(3.35)		(3.64)	
Dual Class	3.355***	0.199***	3.395***	0.198***
	(11.71)		(9.98)	
SPAC	2.099***	0.124***	1.885***	0.110***
	(7.13)		(5.39)	
VC Back	-0.637**	-0.038**	-0.964***	-0.056***
	(-2.41)		(-3.34)	
PE Back	1.084***	0.064***	1.283***	0.075***
	(3.69)		(4.08)	
Observations	1,327		1,247	
Pseudo R-squared	0.425		0.465	
Robust SE	Yes		Yes	
IPO Year FE	No		Yes	
Area Under ROC	0.919		0.930	

Table 3, Continued

Panel B: Entropy Balancing Results

	Before Entropy Balancing					After Entropy Balancing			
	TRA IPO = 1		*TRA IPO* = 0			*TRA IPO* = 1		*TRA IPO* = 0	
	Mean	Variance	Mean	Variance		Mean	Variance	Mean	Variance
Size Pre	5.893	2.216	4.881	3.547	*Size Pre*	5.893	2.216	5.886	2.214
PTI Pre	-0.091	0.191	-0.393	0.996	*PTI Pre*	-0.091	0.191	-0.092	0.193
Lev Pre	0.960	0.673	0.931	1.249	*Lev Pre*	0.960	0.673	0.959	0.674
Net DTA Pre	-0.006	0.001	-0.005	0.002	*Net DTA Pre*	-0.006	0.001	-0.006	0.001
Intan Pre	0.332	0.099	0.170	0.062	*Intan Pre*	0.332	0.099	0.332	0.099
Big 4 Pre	0.680	0.219	0.802	0.159	*Big 4 Pre*	0.680	0.219	0.679	0.218
NY Law	0.503	0.252	0.239	0.182	*NY Law*	0.503	0.252	0.503	0.250
Dual Class	0.776	0.175	0.182	0.149	*Dual Class*	0.776	0.175	0.774	0.175
SPAC	0.313	0.216	0.073	0.068	*SPAC*	0.313	0.216	0.313	0.215
VC Back	0.272	0.199	0.586	0.243	*VC Back*	0.272	0.199	0.272	0.198
PE Back	0.497	0.252	0.278	0.201	*PE Back*	0.497	0.252	0.496	0.250

This table presents the results of estimating the TRA determinants model. Panel A presents the regression results of estimating Equation (1) using a logit model. Column (1) presents the results without the IPO year fixed effects, with the marginal effects of those results presented in Column (2). Column (3) presents the results with the IPO year fixed effects, with the marginal effects of those results presented in Column (4). The sample size in Columns (3) and (4) is reduced by 80 observations because some years display no variation in the dependent variable (*TRA*) and therefore cannot be included when IPO year fixed effects are added. The constant is included but not presented for brevity. Robust z-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Panel B presents descriptive statistics of the mean and variance of all determinants in Equation (1) before and after reweighting the non-TRA observations using entropy balancing. The entropy balancing weights are estimated on the first and second moments of each of the variables presented in Panel B of this table. All variables are defined in Appendix B.

Table 4
Summary Statistics

Variables	(1) N	(2) mean	(3) sd	(4) p10	(5) p25	(6) p50	(7) p75	(8) p90
TRA	7,311	0.075	0.264	0.000	0.000	0.000	0.000	0.000
R&D$_{t+1}$	7,311	0.107	0.161	0.000	0.000	0.022	0.162	0.312
Capex$_{t+1}$	7,311	0.353	0.414	0.042	0.103	0.221	0.448	0.789
Total Invest$_{t+1}$	7,311	0.156	0.166	0.015	0.036	0.101	0.219	0.368
Size	7,311	6.410	1.616	4.408	5.338	6.410	7.491	8.508
Lev	7,311	0.292	0.279	0.000	0.041	0.246	0.454	0.653
PTROA	7,311	-0.148	0.447	-0.570	-0.225	-0.016	0.074	0.166
MTB	7,311	4.753	11.309	0.402	1.381	2.843	5.898	11.905
Sales Growth	7,311	0.415	1.400	-0.199	0.002	0.146	0.360	0.786
Cash	7,311	0.475	0.689	0.018	0.062	0.237	0.605	1.101
Div	7,311	0.207	0.405	0.000	0.000	0.000	0.000	1.000
CFO Sales	7,311	-2.874	15.175	-2.243	-0.108	0.063	0.159	0.300
Age	7,311	1.963	0.574	1.099	1.609	1.946	2.303	2.708
Loss	7,311	0.542	0.498	0.000	0.000	1.000	1.000	1.000
DTA	7,311	0.048	0.061	0.000	0.008	0.030	0.064	0.114
DTL	7,311	0.047	0.052	0.000	0.006	0.031	0.069	0.118
NOL	7,311	0.781	0.414	0.000	1.000	1.000	1.000	1.000
Chg NOL	7,311	0.221	0.617	-0.043	0.000	0.004	0.209	0.724
Foreign	7,311	0.001	0.033	-0.011	0.000	0.000	0.004	0.021
Invest Efficiency	6,466	-0.090	0.099	-0.206	-0.114	-0.060	-0.026	-0.010
Tobin's Q	6,466	2.909	2.464	1.027	1.347	2.019	3.511	5.955
Tangibility	6,466	0.199	0.221	0.021	0.046	0.105	0.268	0.542
K-Struct	6,466	0.182	0.217	0.000	0.006	0.094	0.291	0.514
Ind K-Struct	6,466	0.161	0.100	0.072	0.088	0.130	0.210	0.312
Slack	6,466	9.821	23.587	0.073	0.341	2.208	8.294	22.832
Z-Score	6,466	-0.608	4.236	-3.998	-0.928	0.420	1.383	2.373
Operating Cycle	6,466	1.709	3.112	-2.225	-1.486	2.753	4.501	5.229

This table presents summary statistics of the variables used in my empirical analyses to test H1 and H2.

Table 5
TRAs and Investment Policy

Variables	DV =	(1) $R\&D_{t+1}$	(2) $Capex_{t+1}$	(3) $Total\ Invest_{t+1}$
TRA		**-0.024*** **	**0.031**	**-0.018***
		(-3.58)	**(0.70)**	**(-1.88)**
Size		-0.020***	-0.041**	-0.022***
		(-3.54)	(-2.35)	(-3.25)
Lev		-0.018	-0.086**	-0.031**
		(-1.55)	(-2.00)	(-2.04)
PTROA		-0.000	0.084	-0.008
		(-0.04)	(1.20)	(-0.65)
MTB		0.000	0.003***	0.000
		(0.03)	(3.05)	(1.50)
Sales Growth		0.005	0.068***	0.016***
		(1.15)	(2.92)	(2.65)
Cash		0.009	0.157***	-0.004
		(1.13)	(3.03)	(-0.39)
Div		-0.012***	-0.008	-0.006
		(-2.59)	(-0.29)	(-0.73)
CFO Sales		-0.001*	0.002	-0.001*
		(-1.75)	(1.34)	(-1.77)
Age		-0.003	-0.091**	-0.015*
		(-0.59)	(-2.26)	(-1.73)
Loss		0.007*	-0.025	0.004
		(1.65)	(-0.69)	(0.47)
DTA		-0.031	0.163	-0.033
		(-1.17)	(1.07)	(-0.80)
DTL		-0.091**	0.184	-0.140**
		(-1.99)	(0.78)	(-2.14)
NOL		0.010**	0.028	0.009
		(1.97)	(0.85)	(1.13)
Chg NOL		-0.001	-0.086**	-0.004
		(-0.14)	(-2.15)	(-0.51)
Foreign		-0.025	-1.137	0.032
		(-0.22)	(-1.01)	(0.24)
Observations		7,311	7,311	7,311
Adjusted R-squared		0.616	0.297	0.462
IPO Controls from Eq. (1)		Yes	Yes	Yes
Entropy Balance		Yes	Yes	Yes
Industry & Year FE		Yes	Yes	Yes

This table presents the results of estimating Equation (2) by OLS, examining the association between TRAs and firms' investment policy. Columns (1), (2), and (3) present the results with $R\&D_{t+1}$, $Capex_{t+1}$, and $Total\ Invest_{t+1}$ as the dependent variable, respectively. The constant is included but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 6
TRAs, Profitability, and Tax-Advantaged Investment

Variables	*High Profit*: DV =	(1) *High Pre Tax Income*	(2) *High Est Tax Income*
		$R\&D_{t+1}$	
TRA		-0.031***	-0.031***
		(-3.78)	(-4.39)
High Profit		-0.004	-0.007
		(-0.69)	(-1.34)
TRA x High Profit		**0.016****	**0.015****
		(2.02)	**(2.29)**
Size		-0.020***	-0.019***
		(-3.54)	(-3.30)
Lev		-0.019	-0.016
		(-1.58)	(-1.49)
PTROA		-0.002	-0.021
		(-0.14)	(-1.41)
MTB		0.000	-0.000
		(0.14)	(-1.15)
Sales Growth		0.005	0.003
		(1.20)	(0.74)
Cash		0.009	0.011
		(1.06)	(0.93)
Div		-0.013***	-0.010**
		(-2.84)	(-2.34)
CFO Sales		-0.001*	-0.001
		(-1.75)	(-1.51)
Log Age		-0.004	-0.007
		(-0.63)	(-1.28)
Loss		0.008**	0.002
		(1.97)	(0.46)
DTA		-0.042*	-0.036
		(-1.69)	(-1.33)
DTL		-0.083*	-0.063
		(-1.84)	(-1.34)
NOL		0.010**	0.008*
		(2.01)	(1.70)
Chg NOL		-0.002	0.006
		(-0.22)	(0.62)
Foreign		-0.017	0.013
		(-0.15)	(0.11)
Observations		7,311	7,167
Adjusted R-squared		0.617	0.658
IPO Controls from Eq. (1)		Yes	Yes
Entropy Balance		Yes	Yes
Industry & Year FE		Yes	Yes

This table presents the results of examining the influence of profitability on the association between TRAs and tax-advantaged investment. The dependent variable is $R\&D_{t+1}$. Column (1) presents the results with *High Pre Tax Income* as the measure of *High Profit*. Column (2) presents the results with *High Est Tax Income* as the measure of *High Profit*. The constant is included but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 7
TRAs and Investment Efficiency

	(1)	(2)
Invest Efficiency estimated based on:	Capex & R&D	Capex, R&D, & Acquisitions
Variables DV =	*Invest Efficiency*	
TRA	**-0.014****	**-0.016****
	(-2.49)	**(-2.02)**
Size	-0.001	0.010
	(-0.22)	(1.55)
Tobin's Q	-0.005***	-0.009***
	(-2.91)	(-3.20)
Tangibility	-0.042*	-0.014
	(-1.90)	(-0.49)
K-Structure	0.006	0.012
	(0.36)	(0.58)
Ind K-Structure	0.005	0.064
	(0.13)	(1.24)
CFO Sales	0.000	0.000
	(0.49)	(0.63)
Slack	0.000	0.000
	(0.85)	(1.16)
Div	-0.000	-0.008
	(-0.00)	(-1.06)
Age	-0.008*	-0.005
	(-1.68)	(-0.52)
Loss	0.008	0.019*
	(1.13)	(1.92)
Cash	0.005	0.012
	(0.91)	(1.56)
Z-Score	0.003*	0.001
	(1.84)	(0.45)
Operating Cycle	0.001	0.003*
	(0.38)	(1.73)
DTA	0.036	0.023
	(1.38)	(0.51)
DTL	-0.005	0.022
	(-0.15)	(0.32)
NOL	0.000	0.002
	(0.02)	(0.24)
Chg NOL	-0.012***	-0.013*
	(-2.63)	(-1.95)
Foreign	0.051	-0.115
	(0.77)	(-0.41)
Observations	6,466	6,466
Adjusted R-squared	0.384	0.236
IPO Controls from Eq. (1)	Yes	Yes
Entropy Balance	Yes	Yes
Industry & Year FE	Yes	Yes

This table presents the results of estimating Equation (4) by OLS, examining the association between TRAs and investment efficiency. The dependent variable is *Invest Efficiency*, estimated by Equation (3). Column (1) defines *Total Invest* in Equation (3) as the sum of R&D and net capital spending, scaled by beginning of year total assets. Column (2) defines *Total Invest* in Equation (3) as the sum of R&D, net capital, and acquisition spending, scaled by beginning of year total assets. The constant is included but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 8
TRAs, Underinvestment, and Investment Efficiency

	(1)	(2)
	Underinvest = 1	*Underinvest* = 0
Variables DV =	*Invest Efficiency*	
TRA	**-0.009****	**-0.002**
	(-2.25)	**(-0.12)**
Size	-0.002	0.015**
	(-0.70)	(2.01)
Tobin's Q	0.001	-0.012***
	(0.76)	(-4.26)
Tangibility	0.034**	-0.111***
	(2.44)	(-3.24)
K-Structure	-0.032***	0.051
	(-3.56)	(1.42)
Ind K-Structure	0.017	-0.056
	(0.90)	(-0.68)
CFO Sales	-0.000	0.000
	(-0.11)	(0.86)
Slack	-0.000*	0.000
	(-1.96)	(1.42)
Div	-0.001	-0.002
	(-0.37)	(-0.12)
Age	-0.011***	-0.017
	(-2.96)	(-1.45)
Loss	0.008**	0.014
	(2.35)	(0.82)
Cash	0.001	-0.010
	(0.33)	(-1.03)
Z-Score	-0.001	0.006**
	(-0.61)	(2.26)
Operating Cycle	-0.002**	0.002
	(-2.34)	(0.50)
DTA	0.013	0.089
	(0.67)	(1.25)
DTL	-0.048*	0.118
	(-1.69)	(1.03)
NOL	0.007*	-0.028***
	(1.86)	(-2.81)
Chg NOL	-0.013***	0.005
	(-3.25)	(0.80)
Foreign	0.041	0.060
	(0.63)	(0.38)
Observations	3,422	3,043
Adjusted R-squared	0.589	0.459
IPO Controls from Eq. (1)	Yes	Yes
Entropy Balance	Yes	Yes
Industry & Year FE	Yes	Yes

This table presents the results of estimating Equation (4) by OLS, partitioning the sample on *Underinvest*. The dependent variable is *Invest Efficiency* in both columns. *Invest Efficiency* is estimated by Equation (3), defining *Total Invest* as the sum of R&D and net capital spending, scaled by beginning of year total assets. The constant is included but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 9
TRAs, Tax Advantages, and Capital Investment

Panel A: State Statutory Tax Rate		
Variables	DV =	$Capex_{t+1}$
TRA		-0.081
		(-1.62)
State STR		-0.016***
		(-3.05)
TRA x State STR		**0.019****
		(2.37)
Size		-0.047***
		(-2.62)
Lev		-0.090**
		(-2.13)
PTROA		0.085
		(1.23)
MTB		0.003***
		(3.21)
Sales Growth		0.069***
		(2.96)
Cash		0.160***
		(3.12)
Div		-0.014
		(-0.51)
CFO Sales		0.002
		(1.44)
Log Age		-0.092**
		(-2.29)
Loss		-0.021
		(-0.61)
DTA		0.193
		(1.26)
DTL		0.226
		(0.97)
NOL		0.029
		(0.92)
Chg NOL		-0.085**
		(-2.11)
Foreign		-1.030
		(-0.96)
Observations		7,311
Adjusted R-squared		0.307
IPO Controls from Eq. (1)		Yes
Entropy Balanced		Yes
Industry & Year FE		Yes

Table 9, Continued

Panel B: Fourth Quarter Capital Investment Spikes		
Variables	DV =	*Capex Q4 Spike*
TRA		**-0.124****
		(-2.04)
Tax Status		0.105*
		(1.66)
Size		0.070
		(1.64)
Tobin's Q		-0.003
		(-0.14)
Cash		-0.138
		(-1.24)
Capex		-0.048
		(-0.95)
Sale Q4 Spike		0.028
		(0.40)
DTA		0.330
		(0.94)
DTL		0.730
		(1.30)
NOL		-0.194**
		(-1.98)
Chg NOL		-0.051
		(-0.56)
Foreign		-1.290
		(-0.90)
Observations		7,242
Adjusted R-squared		0.126
IPO Controls from Eq. (1)		Yes
Entropy Balanced		Yes
Industry & Year FE		Yes

This table presents the results of examining the influence of tax advantages on the association between TRAs and capital investment. Panel A presents the results of estimating a modified version of Equation (2), adding *State STR* and its interaction with *TRA* as additional covariates. Panel B estimates Equation (5), examining the association between TRAs and fourth quarter capital investment spikes. The constant is included in both panels but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 10
TRAs and Unrecognized Tax Benefits

Variables	DV =	(1) *End UTB*	(2) *UTB Add*
TRA		**-0.421*** **	**-0.063** **
		(-4.18)	**(-2.52)**
PTROA		0.091	0.024
		(0.58)	(0.50)
Size		-0.046	0.017*
		(-0.67)	(1.77)
Foreign Sales%		-0.180	-0.024
		(-0.45)	(-0.32)
R&D		0.600	0.115
		(1.43)	(1.11)
Lev		0.236	0.035
		(1.11)	(0.66)
Disc Accruals		-0.202	-0.014
		(-1.11)	(-0.30)
SG&A		-0.080	0.036
		(-0.28)	(0.72)
MTB		0.005*	0.001*
		(1.86)	(1.70)
Sales Growth		-0.002	0.003
		(-0.10)	(0.51)
DTA		0.311	0.053
		(0.58)	(0.40)
DTL		0.202	0.019
		(0.24)	(0.08)
NOL		0.438***	0.043**
		(4.17)	(2.14)
Chg NOL		0.039	-0.016
		(0.34)	(-0.74)
Foreign		1.509	-0.312
		(0.99)	(-0.81)
Observations		5,663	5,663
Adjusted R-squared		0.312	0.179
IPO Controls from Eq. (1)		Yes	Yes
Entropy Balanced		Yes	Yes
Industry & Year FE		Yes	Yes

This table presents the results of estimating Equation (6) by OLS, examining the association between TRAs and unrecognized tax benefits (UTBs). Column (1) presents the results with *End UTB* as the dependent variable. Column (2) presents the results with *UTB Add* as the dependent variable. The constant is included but not presented for brevity. Standard errors are clustered by firm and t-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.

Table 11
TRAs and Takeover Likelihood

Panel A: Sample Selection at the IPO-level

	IPOs
U.S. IPO firms from 2004 to 2023 with offer price of at least $5.00	4,290
Less: IPO firms not matched to Compustat	(1,293)
Less: IPO firms with missing variables in Equation (1)	(1,008)
Less: IPO firms with IPO dates before 2005 and after 2022	(60)
Less: IPO firms that are delisted other than by M&A in the three years following IPO	(73)
Less: IPO firms in financial and utilities industries	(282)
Less: IPO firms with missing variables in Equation (7)	(378)
Sample of IPO firms for takeover analysis	1,196

Panel B: Regression Results

	(1)	(2)	(3)	(4)
DV =	*Acquired*			
Variables	Logit Estimation	Marginal Effects	Logit Estimation	Marginal Effects
TRA IPO	**0.886*** **	**0.090*** **	**1.017** **	**0.088** **
	(2.69)		**(2.27)**	
Size IPO	-0.061	-0.006	0.107	0.009
	(-0.29)		(0.23)	
Lev IPO	0.613	0.062	1.545*	0.134*
	(1.32)		(1.67)	
Tobin's Q IPO	0.008	0.001	0.003	0.000
	(0.18)		(0.03)	
PP&E IPO	-0.818	-0.083	-0.280	-0.024
	(-1.24)		(-0.24)	
Liquidity IPO	-1.010*	-0.103*	-2.211*	-0.192*
	(-1.79)		(-1.95)	
Growth IPO	-0.025	-0.003	-0.019	-0.002
	(-0.38)		(-0.11)	
BHAR IPO	-0.328	-0.033	-1.254*	-0.109*
	(-1.09)		(-1.89)	
Observations	1,196		1,196	
Pseudo R-squared	0.054		0.228	
Robust SE	Yes		Yes	
IPO Year FE	Yes		Yes	
IPO Controls from Eq. (1)	Yes		Yes	
Entropy Balance	No		Yes	

This table presents the results of examining the association between TRAs and takeover likelihood. Panel A presents the sample selection criteria for the sample of IPOs used in this analysis. Panel B presents the results of estimating Equation (7) by logistic regression. The dependent variable is *Acquired*. Column (1) presents the results without entropy balancing, with the marginal effects of those results presented in Column (2). Column (3) presents the results with entropy balancing, with the marginal effects of those results presented in Column (4). The constant is included but not presented for brevity. Robust z-statistics are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. All variables are defined in Appendix B.