Funding needs and tax underpayments

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Abstract

Recent research finds that firms respond to financial constraints by reducing cash tax payments through tax planning. We build on this financing-based explanation for corporate tax decisions by examining i) whether firms reduce tax payments in response to immediate cash needs (a necessary but not sufficient condition for financial constraints) and ii) whether these reductions are conditional on firms' access to or use of external financing. The average profitable firm in our sample is significantly more likely to proactively underpay taxes in years it faces a cash shortfall. Firms with the capacity to access external funds are no less likely to underpay taxes in response to a cash shortfall. This suggests that firms' use of tax payments to satisfy cash needs expands beyond the specific case of facing financial constraints. While the sensitivity of tax underpayments to cash shortfalls is statistically significant, it is also small compared to debt, equity, and trade credit responses. Our results suggest that firms' immediate cash needs are an important driver of firms' decision to underpay taxes.

Keywords: taxes; underpayment; financing; financial constraint; cash needs; shortfall

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1. INTRODUCTION

Andreoni (1992) was one of the first studies to consider a link between financing needs and tax reporting, arguing that "Even if a person finds tax evasion undesirable in the absence of borrowing constraints, it could become desirable if a borrowing constraint is binding. Tax evasion, therefore, may be a high-risk substitute for a loan." Extending this to the firm and generalizing the application to tax compliance leads to the prediction that a firm facing financial constraints is more likely to increase tax planning to address its financing needs. This question has attracted policy and academic attention focused on the role of financial constraints in explaining corporate tax decisions (Brondolo 2009; Law and Mills 2015; Dyreng and Markle 2016; Edwards et al. 2016; Alm et al. 2019; Campbell et al. 2021; Campbell et al. 2023).

In this paper, we focus on cash shortfalls as an explanation for firms' decisions to underpay taxes. We do so because immediate cash needs are a necessary (but not sufficient) condition for financial constraints, and the best predictor of significant new external financing is an expected cash shortfall (Denis and McKeon 2012, 2021; DeAngelo et al. 2010; Huang and Ritter 2021). This focus on cash needs allows us to extend the literature on financing-based explanations of corporate tax decisions by providing evidence on the following three questions: Do firms address cash shortfalls by reducing tax payments? Does this response depend on the marginal costs of external financing? How does the propensity to raise funds through tax savings relate to the firm's use of debt, equity, and supplier financing?

The contract between the firm and the state allocates the state a share of the firm's cash flows in the form of income taxes. Because the firm controls both the reporting of the tax obligation and the timing of the estimated quarterly income tax payments, it effectively holds an option to put a

security to the government. This can look like short-term debt, as the firm essentially activates a line of credit that defers cash tax payments (with no effect on the reported tax obligation). Like a traditional line of credit, maturity is controlled by the firm, the principal is known, and the borrowing cost is predictable (interest and nominal penalties). Unlike a line of credit, there is no cost on undrawn funds, covenants, or collateral. A more complex tactic reduces cash tax payments by shifting the timing, character, or location of reported income and deductions. This creates a contingent obligation characterized by more volatile cash flows and higher risk. In both cases, managers intentionally use discretion over tax reporting and payment decisions to address a cash need. That is, underpaying taxes becomes a form of external financing.

Recent research tests whether this "cash tax financing" is a last resort option that firms are more likely to consider when traditional financing sources—debt and equity—become too expensive. This intuition is captured by Law and Mills (2015), who argue that "financially constrained firms could pursue more aggressive tax planning on the margin as a substitute for a more expensive source of external financing from lenders or capital markets." Empirical studies, including Law and Mills (2015), Edwards et al. (2016), Alm et al. (2019), and Campbell et al. (2021) conclude that firms facing binding financial constraints avoid more tax.

By testing the sensitivity of effective tax rates to financial constraints, these (and other) studies advance a novel, financing-based explanation for the observed variation in tax planning. However, they do not address whether the estimated tax savings are associated with underlying cash needs. This is a crucial point, as cash needs are the primary driver of both constrained and unconstrained firms' incremental financing decisions. Figure 1 describes the relationship between cash needs and financial constraints and shows that constrained firms are a subset of firms with immediate cash needs.

In this study, we ask whether firms that appear to access cash tax financing—those with significant unexpected tax underpayments—do so in response to contemporaneous cash shortfalls. Our focus on observable shortfall situations is motivated by evidence in the corporate finance literature documenting the primacy of cash deficits in explaining firms' new debt and equity financing (Denis and McKeon 2012, 2021; DeAngelo et al. 2010; Huang and Ritter 2021). The punchline of this research is that most firms with a large, proactive debt or equity issue would have run out of cash without the issue, given their investment and dividend plans. Similarly, we focus our empirical attention on understanding whether those firms with near-term cash needs also raise cash by underpaying tax liabilities.

Our approach allows managers to use tax underpayments as a complement to traditional financing in the presence of funding needs but does not require the firm to be financially constrained. Recent anecdotal evidence suggests that managers view tax payments as a source of financing. For example, California firms responded to disaster tax relief in 2023, which significantly lowered the marginal cost of underpaying taxes. As illustrated in Figure 2, California corporations took the IRS up on their offer to defer tax payments for about six months with no interest cost.[1] The average California firm pays less cash tax relative to both assets and income during the low-cost borrowing window. Even for a firm without an immediate cash need, the cash savings could be deployed to generate passive income in an interest rate environment in which a 3-month Treasury yield exceeded 5%.

[1] The relief reduced the interest rate on tax underpayments to from 9% to 0% only for California corporations from early January 2023 until October 2023 (with a last-minute extension to November 2023). California and non-California firms paid taxes at roughly the same level and timing before 2023. As expected, California firms significantly reduced quarterly cash tax payments in between quarters ending April 2023 and September 2023. The differences unwind beginning in October. These underpayment patterns are not limited to firms experiencing a deficit and are consistent with firms actively using the IRS as a source of financing. See Williams-Alvarez and Rubin (2023), citing explicit disclosures made by Cisco, Intuit, and Teledyne on tax payment deferrals.

To analyze the role that cash shortfalls play in explaining tax reporting decisions, we first require a proxy for financing raised from the tax authority. To derive this, we estimate industry-specific models of cash tax payments as a function of pre-tax income, the expected benefit from tax loss carryforwards, and the Tax Cut and Jobs Act of 2017 (TCJA). This simple model reflects the generation of tax liabilities as a function of profitability, tax shields, and tax rates. Scaling taxes, income, and loss carryforward benefits by total assets facilitates a more direct comparison to cash needs and alternative funding sources than do effective tax rates. We estimate the model on profitable firm-years and interpret the residual (net of firm fixed effects) as a proxy for unexpected payments to the tax authority.[2]

Among a firm's available funding sources, the potential proceeds from cutting cash tax payments are directly limited by firm size, profitability, laws, and regulations. From untabulated statistics, the interquartile range of the residuals runs from -0.7% (underpayments) to 0.7% (overpayments) of beginning assets. By comparison, the interquartile range of net changes in debt runs from –2.0% (net repayments) to 2.0% (net issues) and between -1.6% (net repurchase) to 0.6% (net issues) for equity. Similar to the literature focused on proactive or intentional financing decisions (e.g., Korteweg et al. 2022), we focus on proactive tax underpayment events, defined as a firm-year in which the estimated tax underpayment as a percentage of assets is within the top 10% of observations that year.[3] In a proactive tax underpayment event, the firm generates cash averaging 2.6% of assets by reducing tax payments. One out of every six firms that proactively

[2] This proxy is admittedly noisy and imprecise. Another option is to estimate a regression of the cash effective tax rate on various "determinants". While widely used, these models are largely ad hoc, partial out the effect of factors correlated with financing needs (such as investment opportunities), and yield a profit-scaled metric that is not directly comparable to the corporate financial policies we are interested in.

[3] Our results are robust to alternate proactive tax underpayment thresholds, including tax underpayments in excess of 1%, 1.5%, 2%, and 5% of beginning assets.

underpaid taxes would have run out of cash by the end of the year had they paid taxes at the level predicted by our model.

Our first set of results centers on the sensitivity of proactive tax underpayment events to the firm's cash needs. We model the likelihood of proactive tax underpayment events as a function of cash shortfalls to identify firms most likely to face a cash squeeze that needs to be addressed immediately. Proactive tax underpayment events respond to cash shortfalls consistent with predictions. Firms appear significantly more likely to proactively cut cash taxes when they face immediate cash needs. This is true whether we define the shortfall as a current net cash flow deficit (capital expenditures plus dividends exceed operating cash flows at expected taxes) or immediate cash depletion (the net cash flow deficit exhausts beginning cash).[4]

On average, the probability of a proactive tax underpayment event is 0.023 higher if the firm faces a net cash flow deficit and 0.021 higher if the firm faces immediate cash depletion. Relative to firms not facing a net cash flow deficit (immediate depletion), these probabilities represent a 24% (21.4%) increase in the likelihood of a proactive tax underpayment event in a shortfall year. This evidence supports the prediction that firms use the tax function to partially address transitory funding needs.

After establishing that tax underpayments are more likely to occur in periods with expected cash shortfalls, we then determine whether this association depends on firms' capacity for external financing. Recent empirical research tests Andreoni's (1992) hypothesis that taxpayers proactively use the tax authority as a last resort source of financing, accessed in periods of binding financial constraints. However, tax financing need not be a last resort. If the marginal cost of financing

[4] Because capital expenditures and dividends can be endogenous to internal funding (firms cut current capital expenditures and dividends in the presence of binding financial constraints), we use lagged values of capital expenditure and dividends. Because reported operating cash flows are endogenous to discretionary tax payment decisions, we adjust it to capture predicted cash tax payments using the model described later in Equation (1).

through the tax authority is low enough, we should also observe this activity even among the financially *unconstrained*.

To this end, we first sort firms on simple ex ante proxies for marginal external financing costs. We focus on leverage and the ratio of market values to book values (market-to-book) and assume the marginal cost of debt increases in leverage while the marginal cost of equity decreases in market-to-book. If tax underpayments respond to cash shortfalls primarily because of financial constraints, we should find the most robust results among the firms that start with high-leverage or low market-to-book. However, we do not find this. The average proactive tax underpayment response to a cash shortfall is never stronger in these firms. The low external financing cost sample produces greater estimated tax sensitivity to cash shortfalls in all specifications, significantly so in two cases. This suggests that an immediate cash need is the dominant explanation for tax-based financing activity.[5]

To complement this analysis, we sort the sample on ex post financing decisions in the same year as tax underpayments. Firms with actual external financing—a large debt or equity issue, repurchase, or repayment—are objectively unconstrained (van Binsbergen et al. 2010). We find similar tax sensitivities to cash shortfalls in both samples, suggesting that the demand for tax underpayments in response to cash shortfalls is strong even when we have prima facie evidence that the firm is not constrained. The estimated effects are larger in the "not unconstrained" sample but not significantly so. This could be consistent with a financial constraints interpretation, but could also arise if a firm raises sufficient funds through tax savings that it does not need to access other sources.

[5] We recognize that tax financing patterns could vary over time. Richardson et al. (2015) that financially distressed Australian firms were more likely to avoid tax following the 2008 global financial crisis. It is also possible that firms manage taxable income to exploit extended carryback periods.

Finally, we provide evidence on the relative sensitivity of tax underpayments to cash needs by comparing its response to the firm's other financing options. We first estimate a series of regressions in which the dependent variable represents one of the four funding sources we consider (taxes, debt, equity, and trade credit). Second, we condition the shortfall response on the various sources and uses of cash, including beginning cash holdings, net cash flows, net debt issues (repayments), net equity issues (repurchases), and net supplier financing expansions (repayments). These specifications allow us to benchmark the strength of the tax response to other financing responses and to better understand how and when firms use the tax option in addition to or in place of other options.

We find that the sensitivity of the tax underpayment response is modest and predictably lower than the debt and even trade credit responses.[6] Using the annual top decile to define proactive financing, a net cash flow deficit increases the probability of a proactive debt issue by 0.030 for debt but only 0.008 for equity. Supplier financing is also important; the probability of a proactive trade credit increase rises by 0.053 in response to a deficit. The relatively low sensitivity of tax responses to cash needs does not imply that underpaying taxes is a last resort. Other sources naturally dominate "normal" external financing decisions on average; however, the tax authority arises as a viable alternative source when cash needs are modest, even when debt financing is an option.

This study links financing and tax decisions through a funding needs channel, connecting our questions to four streams of research on taxes and financial policy. First, firms that find it

[6] A proactive tax underpayment is similar to borrowing on trade credit in that firms may be able to economically access the financing (by underpaying estimated taxes or allowing accounts payable to increase) without applying for or entering into new formal debt agreements. However, there are several differences. Per Costello (2019), "trade credit is the largest form of short-term external finance for firms in the United States." Firms engage in borrowing on trade credit to a larger magnitude than borrowing through tax underpayments. Additionally, borrowing on trade credit is subject to higher variability of risks, terms, and power differentials since the other party in trade credit borrowing will be one of the firm's suppliers, while in tax financing the other party is always the firm's regulator: the IRS.

expensive to finance with debt or equity will also face limited options for tax avoidance as metrics that affect the cost of debt and equity—marginal tax benefits of debt, financial leverage, and profitability (van Binsbergen et al. 2010; Korteweg 2010)—are also key drivers of tax underpayment capacity. Firms cannot raise cash by cutting taxes if they have little to no tax obligation. Second, if the cost of equity and debt financing is sensitive to tax planning as the literature suggests (Hasan et al. 2014; Heitzman and Ogneva 2019; Goh et al. 2016), the argument that a firm facing high external financing costs avoids more tax ignores the potential feedback from tax avoidance to cost of capital. Supporting lender aversion to a firm's cash tax underpayment, many loan contracts also include covenants to pay taxes, and lenders charge higher spreads when cash tax volatility is high (Saavedra 2019).[7] Third, a firm's cash policies also appear to depend on taxes in unique ways. Firms increase cash holdings to satisfy future claims on aggressive tax positions (Hanlon et al. 2017) or to take advantage of loss carryforwards that reduce the tax on interest income (Heitzman and Lester 2022). Finally, if the tax benefits from debt are negatively correlated with the tax benefits from non-debt sources (DeAngelo and Masulis 1980; Graham and Tucker 2006), firms with the most debt overhang (least financial flexibility) should have the smallest gain from marginal tax reduction strategies. We raise these points to encourage future research that enhances our understanding of all the channels through which taxes and corporate financial policies interact.

[7] Affirmative debt covenants directing companies to stay current with federal income tax payments are common. For example, in Lockheed Martin's revolving credit agreement dated 8/24/2021, Section 5.02 details a covenant regarding the payment of obligations: "The Company will pay and discharge, and will cause each Restricted Subsidiary to pay and discharge, all material taxes, assessments and governmental charges or levies imposed upon it or upon its income or profits, or upon any property belonging to it, prior to the date on which penalties attach thereto, and all lawful material claims which, if unpaid, might become a Lien upon the property of the Company or such Restricted Subsidiary; provided that neither the Company nor any such Restricted Subsidiary shall be required to pay any such tax, assessment, charge, levy or claim (i) the payment of which is being contested in good faith and by proper proceedings, (ii) not yet delinquent or (iii) the non-payment of which, if taken in the aggregate, would not be reasonably likely to result in a Material Adverse Effect."

Our study contributes to two streams of literature. First, we contribute to a growing body of literature spanning economics, financing, and accounting on the role of the tax authority as a financing source. The mechanics that link tax reporting to cash flows are clear. However, more clarity is needed as to whether and how firms pursue this in the context of real-world corporate finance decisions, especially for the publicly traded firms studied in Law and Mills (2015), Edwards et al. (2016), and Campbell et al. (2021). California firms' strong response to disaster tax relief in 2023 (Figure 2) suggests that firms will treat taxes as a financing source in the right situations. In this paper, we extend the existing literature by linking tax underpayments to immediate cash needs as well as the capacity for and use of traditional financing. Moreover, our study provides more texture for interpreting recent work examining how firms deploy cash raised from tax sources (Dobridge 2021; Guenther et al. 2020).[8]

Our study also contributes to corporate finance literature examining how firms meet their funding needs. Moving beyond static tradeoff and pecking order models of finance, recent research suggests a dynamic process in which firms value financial flexibility, issue debt to satisfy short-term funding needs, and issue equity for long-term needs (DeAngelo et al. 2018). Evidence on the relative importance of taxes in determining capital structure is inconclusive at best (Hanlon and Heitzman 2022). It is within this financing-based framework that we also consider tax underpayments as a complement to traditional debt and equity sources to address real cash shortfalls.

[8] It is not obvious ex ante why a manager would spend the cash raised from underpaying taxes any differently than other sources of cash. Moreover, the sources of tax savings are quite different. Dobridge (2021) studies firms' use of cash refunds obtained from extended loss carryback opportunities following the 2001 and 2007 through 2009 recessions (see also Maydew 1997, and Erickson et al. 2013). She finds that carryback refunds reduced the costs of distress after the later recession, by increasing cash and paying down debt. However, the opportunity to raise cash through a refund in her setting only arises because of intentional (and temporary) actions by Congress in response to macroeconomic shocks. Other studies, such as Green and Kerr (2022) and Guenther et al. (2021) do focus more on tax planning, but are interested in responses to effective tax rates or total cash taxes paid, making comparisons difficult.

2. TAXES AND FINANCING

2.1. The tax authority as a financing source

Desai et al. (2007) characterize the state as a firm's largest single minority shareholder. While the state does not usually have voting or control rights, it does have cash flow rights in the form of a claim on a share of reported profits. The contract between the firm and the state allows the firm to control the timing and amounts of these payments. This gives the firm an option to put a security to the tax authority, providing an additional source of external financing.

One simple short-term financing option is to defer a known cash tax payment. Firms are required to make approximated quarterly interim cash tax payments to the tax authority. For the tax-paying firm, this acts like an open line of credit with the government that can be drawn down by underpaying the interim estimated tax payments and recognizing a corresponding liability. The annualized interest cost is predictable and determined by law, and options exist to avoid interest and penalties altogether. Figure 3 plots the statutory interest rate on underpaid taxes over our sample period.[9] This strategy reduces cash taxes in the current period, increases cash taxes in a future period, and has no effect on accrual-based tax expense.

The long-term, aggressive strategy that matches the underpayment of cash taxes to under-reported taxable income on the tax return is more complex. This approach requires shifting the timing, character, or location of reported income and deductions and creates an economic liability contingent on several factors. If the tax authority fails to discover the underreported income, wealth

[9] The IRS imposes an interest charge on underpaid taxes under §6601, with the interest rate determined under §6621. The interest rate, determined quarterly, equals the federal short-term rate under §1274(d) (generally the yield on U.S. Treasury securities with maturities rounded to the nearest full percent) plus 3% (5% in the case of large corporate underpayments that meet the conditions in §6621(c)). From 1999 through 2023, the applicable interest rate ranged from 3% to 8%. See Appendix E for details.

is transferred to lenders and shareholders. If the tax authority successfully challenges it, the firm will owe back taxes plus interest and penalties (plus other indirect costs such as elevated audit scrutiny in the future). The maturity of the economic liability depends on the probability and timing of an audit, and the interest cost (including penalties) will depend on the nature and duration of the unreported income. In this case, the marginal "cost" of debt includes the probability of discovery and challenge, the interest and penalties assessed if discovered, and the opportunity cost of cash reserved to meet tax challenges (Hanlon et al. 2017).

2.2.Tax planning and financial constraints

To date, the research on financing-based explanations for tax planning and compliance decisions focuses on financially constrained firms. Andreoni (1992) models the role of the government as a loan shark to taxpayers who demand resources now but face liquidity constraints. This introduces the idea of the government as a "last resort" source of financing. An International Monetary Fund staff position note (Brondolo 2009) discusses how economic downturns affect taxpayer compliance, increasing it when reductions to income reduce the tax available and incentive to take risk and decreasing it when taxpayers view cash tax obligations as an alternative source of financing or as an opportunity to avoid costly bankruptcy.[10]

Using survey data from 27 transitional countries on managers' perceptions of tax underreporting and the cost of and access to external finance, Alm et al. (2019) conclude that constrained firms are more likely to be involved in tax evasion to relax those constraints. Using a larger sample of survey data from firms in over 100 countries, Beck et al. (2014) focus specifically

[10] According to IRM 5.9.1 Overview of Bankruptcy and 11 U.S. Code § 507, in bankruptcy cases, the IRS's claim on unpaid taxes will have priority over certain other unsecured claims. The IRS has a higher priority claim to taxes incurred after bankruptcy petition than to those incurred before. For taxes incurred pre-bankruptcy petition, the IRS has a higher priority claim if the tax return and assessment of tax were recent. In the context of our study, if a firm that engages in proactive tax underpayment activity files for bankruptcy, the IRS will have a higher priority claim on underpayments that have been assessed (IRS sent Notice of Deficiency), that are more aggressive (subject to "hot interest"), and that are more recent.

on bank branch penetration and credit information sharing. They find that both are associated with reduced local tax evasion. The effects are strongest in smaller towns, among smaller firms, and firms with investment opportunities and a need for outside financing. In contrast to Beck et al. (2014), Campbell et al. (2023) find a significant negative association between country-level financial constraint measures and tax planning that is strongest in countries with low transparency and high government debt. The authors infer that poor information environments and weak regulation heighten the reputation and transparency costs of tax planning, leading financially constrained firms to potentially overpay taxes.

Richardson et al. (2015) ask whether Australian firms managed their tax liability down in response to the global financial crisis of 2008. This event arguably increased the cost of external financing for all firms. Using cash effective tax rates and book-tax differences to proxy for tax avoidance, they find that firms reduce taxes during the crisis. This reduction appears concentrated in those firms closest to default.

Law and Mills (2015) link a linguistic-based measure of financial constraints derived from corporate disclosure tone to a variety of proxies for aggressive tax planning, including uncertain tax benefits, effective tax rates, tax haven use, and proposed IRS audit adjustments. Firms facing higher financial constraints by their measure are consistently more aggressive in their tax planning. This finding holds up using an exogenous shock to financial constraints through local bank closures. Their measure of financial constraints predicts persistent increases in tax avoidance, with significantly lower ETRs up to five years in the future.

Edwards et al. (2016) find that changes in Z-Score and the Kaplan and Zingales (1997) financial constraints index predict lower effective tax rates. Moreover, they show that the effects are weaker in firms with more significant cash holdings and in loss firms. The results appear driven

by deferral-based strategies. Similar to Richardson et al. (2015), Edwards et al. (2016) document increases in tax planning in response to the tightening of credit conditions during the financial crisis years (2008 through 2010). Campbell et al. (2021) use the Pension Protection Act of 2006 as an exogenous shock to financing constraints. They find that pension firms have significantly lower effective tax rates after the Act, that the cash taxes saved mitigate investment shortfalls, and that the decline in ETRs is strongest in those firms most affected.

Dyreng and Markle (2016) identify a counterintuitive setting in which financial constraints reduce tax planning. Firms that shift income to lower-tax foreign subsidiaries must also commit to leaving the funds reinvested in that foreign country. This constrains a firm that has cash needs elsewhere in the organization, as it cannot satisfy those needs without incurring the repatriation tax. As a result, they find that financially constrained domestic firms are less likely to shift income overseas during a worldwide taxation regime.

Taken together, the literature offers a compelling and novel understanding of how managers view the firm's contract with the tax authority. In most (but not all) situations, managers appear more likely to take actions that reduce their current tax bill when also facing financial constraints, measured using a variety of proxies found in the literature. These studies generally do not address whether the precursor to financial constraints (immediate cash needs) plays a role. This opens up the opportunity to understand how managers' tax decisions depend on cash shortfalls, an important concept in explaining capital structure decisions that we discuss next.

2.3. Cash shortfalls and financing decisions

We expand the financing-based explanation for tax planning discussed in the previous section by considering the firm's cash needs—a first-order consideration of corporate financial policy. Survey evidence finds that funding needs and financial flexibility are persistent drivers of firms'

debt decisions (Graham 2022). Dynamic tradeoff theory argues that firms have long-run leverage targets but intentionally deviate from them to fund marginal investment, typically with debt (DeAngelo et al. 2011). If cash flow shortfalls persist, the firm deviates further from the leverage target; otherwise, it pays down debt sufficiently to regain borrowing capacity (e.g., DeAngelo et al. 2018).

The importance of cash needs for external funding decisions is implied by the cash flow identity; uses of cash must be met with sources of cash. However, the frequency with which firms would have run out of cash absent external funding is significant, particularly when examined in light of growing cash holdings. This means that cash shortfalls are powerful predictors of financing decisions. DeAngelo et al. (2010) find that 63% of firms conducting an SEO would have run out of cash absent the issue. Huang and Ritter (2021) show that over 80% of firms facing immediate cash depletion proactively issue debt or equity. Denis and McKeon (2012) document significant debt financing by firms facing cash deficits, even when the firm is above target leverage. The collective evidence suggests that a more fulsome investigation of managers' use of taxes to address financing needs should begin at the source – with their actual need for cash.

2.4. Discussion and empirical predictions

Firms that cannot meet cash needs internally must raise external funds to remain liquid and solvent. While external financing options are usually limited to traditional debt and equity issues, a firm can also generate cash by underpaying the tax authority. Thus, we predict that firms are more likely to proactively underpay taxes in response to immediate cash needs. Moreover, if the cash needs response is driven by financial constraints, as recent studies suggest, we predict that the sensitivity of proactive tax underpayments to cash needs will be weaker in firms that appear to face low external financing costs. Finally, in line with their comparatively modest potential to

generate significant cash, we predict that tax savings responses to cash shortfalls will be smaller than the responses of debt and equity issues.

3. SAMPLE AND DESCRIPTIVE STATISTICS

3.1. *The sample*

Our sample of U.S. firms covered by Compustat spans firm-years between 1990 and 2023.[11] We exclude firms that do not have market pricing data from CRSP and at least three years of accounting data, those in the financial and utility sectors, and those that have under $10 million in assets in 2020 dollars or zero sales. Our final sample consists of 94,918 firm-year observations, 66,052 of which have positive pretax income. Appendix A describes the variables used in this study. Appendix B describes the sample selection process.

3.2. Estimating tax underpayments

We are interested in the degree to which managers use discretion to generate cash from the tax planning and compliance function. This requires a model of expected cash tax payments. A complex set of rules determines corporate tax liabilities, and interactions are difficult to model even with access to confidential tax return data. Consistent with prior research, we rely on firms' financial statement disclosure of cash taxes paid during the year as our variable of interest and assume that the core determinants are pretax income, tax shields, and tax rates. We model cash taxes as follows:

$$\frac{Cash\ tax_{it}}{Assets_{it-1}} = \beta_{1\tau}\frac{PTI_{it}}{Assets_{it-1}} + \beta_{2\tau}\frac{Available\ NOL\ benefit_{it-1}}{Assets_{it-1}} + \beta_{3\tau}\frac{Excess\ NOL\ benefit_{it-1}}{Assets_{it-1}} + \gamma_i + \delta_t + e_{it} \quad (1)$$

[11] Our analysis relies on variables from the Statement of Cash Flows, which has been required under GAAP only since 1987/1988. Since we require 3 years of data availability, our sample begins in 1990.

Where *Cash tax* is cash paid for income taxes during the fiscal year (Compustat variable txpd), *Assets* is based on the lease-adjusted book value of assets (at), and *PTI* is pretax income before special items (pi - spi). *NOL benefit* is the undiscounted value of NOL carryforwards following the approach in Heitzman and Lester (2021). We disaggregate the NOL benefit into "available" and "excess" components to reflect the fact that the cash tax value of the marginal NOL declines as NOLs exceed (pre-NOL) income. *Available NOL benefit* captures the variation in estimated NOL benefits that is usable given pretax income. *Excess NOL benefit* captures the variation in estimated NOL benefits that exceed what is currently usable.[12] The subscript τ indicates that the coefficients are estimated separately for the periods before and after TCJA. We estimate the model by Fama-French 48 industry and use the firm's most recent industry assignment to ensure that each firm is included in one industry regression.[13] We exclude negative *PTI* observations from the estimation (roughly 30% of the sample) as loss firms have limited capacity to strategically manage their cash tax obligations. Empirically, their cash taxes are largely uncorrelated with income and tax shields. However, we retain them as a comparison group to provide a more complete picture of the incidence of financial constraints and the capacity for tax financing activity in the economy. We include firm (γ) and year (δ) fixed effects in the regressions.

Table 1 provides descriptive data on the model inputs and estimation results. In Panel A, we find that the average profitable firm pays cash taxes equal to 2.8% of beginning assets and has pretax income of 11.7% of assets. The average nominal tax benefit from NOLs is 3.6% of assets. Panel B provides the distributional statistics on the coefficients from our 43 industry-specific

[12] Specifically, *Available NOL benefit* equals min(*NOL benefit*, 0.23**PTI*), and *Excess NOL benefit* equals min(0,*NOL benefit – Available NOL benefit*). The 0.23 adjustment to *PTI* is an estimate of the average tax liability that can be shielded with NOLs. For more detail on this figure, see Heitzman and Lester (2021).

[13] We repeat this analysis by running a single model rather than running the model by industry, with similar results. This model can be found in Appendix D.

regressions. The average coefficient on *PTI* (β_1) is 0.258 (implying an average cash ETR of 25.8%), with an interquartile range of 0.226 to 0.288. The coefficient declines by an average of 0.091 after TCJA.

NOLs generate tax savings as expected. The average coefficient on the *Available NOL benefit* (β_2) is -0.648 and implies an average cash realization of $0.65 for each $1 of NOL benefit until income is exhausted. For NOLs beyond that (β_3), firms effectively realize no current benefit, as expected. After TCJA, the marginal benefit of NOLs declines, consistent with the lower rate and more restrictive NOL rules. We demean the residuals at the firm level by including firm fixed effects to generate estimates of unexpected cash taxes. As discussed next, we use these residuals to identify proactive tax underpayment events.

3.3. Proactive tax underpayments

We are interested in whether firms deliberately use the tax authority as an alternative financing source. We cannot observe whether deviations from expected cash taxes are deliberate attempts to meet a funding need, intentional shifts in tax planning strategy unrelated to financing needs, an incomplete model of cash tax obligations, or random variation. This makes continuous variation in unexpected cash taxes challenging to interpret, as much or most of it will be unrelated to the phenomena we are interested in testing.[14]

To address this, we focus on tax financing episodes by imposing a size threshold consistent with the literature on capital structure adjustments that focuses on intentional or "proactive" financing decisions (Graham 1996; Hovakimian et al. 2001; Leary and Roberts 2005; Huang and Ritter 2021; Korteweg et al. 2022). In that literature, proactive net debt or equity issues are defined as those exceeding some threshold percentage of book or market value, usually between 2% and

[14] Welch (2011) raises related concerns in using financial statement information to distinguish deliberate financing decisions from other causes.

5%. In this paper, we define observations in the bottom decile of unexpected cash taxes each year as a "proactive tax underpayment" event. The average underpayment (cash raised) in this sample is 2.6% of assets. For consistency, we identify proactive debt, equity, and supplier financing activity from the top decile of their distributions each year. These firms raise an average of 30.5%, 24.5%, and 9.7% of assets from these sources, respectively (untabulated).

Panel A of Table 2 reports summary statistics on the full sample of profitable firm-years with estimates of unexpected cash taxes (Column 1), firm-years with proactive tax underpayments (Column 2), other profitable firm-years (Column 3), and the *p*-value from a two-tailed test of differences between the means in Columns 2 and 3. For comparison, we report the sample averages for unprofitable firm-years in Column 5. Proactive tax underpayment firm-years (Column 2) generate cash flows averaging 2.6% of beginning assets (-1*cash tax residual). The same firms have net debt issues averaging 2.6% of assets (ΔD_{CF} / $Assets_{t-1}$) and net equity issues averaging 3.0% of assets (ΔE_{CF} / $Assets_{t-1}$). They are smaller but have more investment opportunities, as reflected in capex (7.2% vs. 6.6% of beginning assets), R&D (4.5% vs. 3.2% of beginning assets), and market-to-book (2.489 vs 1.912). They have higher Z-scores, are less likely to pay dividends, and have higher stock returns. Proactive tax underpayment firms start the year with more cash on average (18.7% vs. 14.6%), but 16.1% would have run out of cash without the tax savings. This frequency is similar to the frequency of firms that would have run out of cash without debt and equity financing (15.0%). Interestingly, they start the year with less leverage (18.1% vs. 22.8%), suggesting greater capacity for borrowing.

Turning to standard tax planning and avoidance measures, proactive tax underpayment firm-years see lower cash ETRs (11.1% vs. 25.8%) but similar GAAP ETRs (28.9% vs. 30.6%). Combined with minimal growth in the balance of uncertain tax benefits, this pattern implies that

the tax reductions we capture are not the result of aggressive, non-conforming strategies. Instead, they most likely arise from simple deferrals of tax payments or delays in the timing of income recognition.

For comparison, unprofitable firms (Column 5) hold cash balances averaging 29.2% of beginning assets. These firms tend to have higher beginning leverage (23.3%) and raise new cash through equity issues (14.7% of beginning assets). One-quarter of these firms would have run out of cash without debt and equity financing (24.8%). However, these firms do not generally have the option to underpay taxes as they are not in a tax-paying position.

4. RESULTS

4.1. Tax underpayment and cash needs

Our study focuses on three questions: Do firms reduce cash taxes in response to immediate cash needs? Does this depend on firms' access to external financing? And how do tax responses to cash needs compare to traditional financing responses? Our first test asks whether tax underpayments are associated with levels of beginning cash, net cash flows, and net cash from debt and equity issues, and trade credit growth:

$$Proactive\ tax\ underpayment_t(0,1) = \alpha_1 \frac{Cash_{t-1}}{Assets_{t-1}} + \alpha_2 \frac{NCF_t(tax\ adj.)}{Assets_{t-1}} + \alpha_3 \frac{\Delta D_{CFt}}{Assets_{t-1}} + \alpha_4 \frac{\Delta E_{CFt}}{Assets_{t-1}} + \alpha_5 \frac{\Delta AP_{BSt}}{Assets_{t-1}} + Controls + e \quad (2)$$

Proactive tax underpayment is the discrete measure derived from Eq. (1). *Cash* includes cash and short-term investments (che). *NCF,* or net cash flows, is expected operating cash flows in period *t* less capital expenditures (capx) and dividends (dvc) in period *t* - 1. Because operating cash flows

are reported after income taxes, we adjust operating cash flows (oancf) to reflect cash taxes predicted by Eq. (1) to derive a before-tax planning cash flow estimate. Moreover, we subtract the change in accounts payable (ΔAP_{BS}) as we consider that a separate financing source. We also lag capital expenditures and dividends to proxy for their expected amounts. This addresses the concern that firms' realized dividends and capital expenditures in period *t* are endogenous to the availability of external funds in period *t* (e.g., financial constraints are binding). Debt (ΔD_{CF}) and equity (ΔE_{CF}) issues are measured from the cash flow statement ((dltis – dltr) and (sstk – prstkc), respectively), while trade credit growth (ΔAP_{BS}) is identified from changes in the balance sheet amount of accounts payable. We also include a vector of control variables in the regression, including the log of total assets, market-to-book, beginning leverage, dividend policy, stock returns and volatility, and industry- and year-fixed effects.[15] All continuous accounting variables are scaled by beginning assets. If firms are more likely to tap into tax underpayments as other sources of cash decline, we expect negative coefficients on α_1 through α_5.

In Table 3, we report results from regressions of the likelihood of proactive tax underpayment on proxies for cash needs, alternative funding sources, and control variables. In the table, we report the results from linear probability models to ease the interpretation of the coefficients.[16] In Column 1 of Table 3, we find no evidence that the level of cash on hand at the beginning of the year matters. However, tax underpayments decline as net cash flows increase (coeff = -0.043, p = 0.003 in Column 1). This is consistent with firms saving more (paying less) as the need to generate cash increases. They appear unrelated to net debt and equity issues but are increasing in supplier

[15] This model does not include firm fixed effects as we employ firm effects in the first-stage model of unexpected cash taxes. However, the regression results are robust to the inclusion of firm fixed effects in place of industry fixed effects.

[16] We also provide the results from logit regressions in Appendix C, which show consistent findings.

financing. Turning to the controls, small firms, growth firms, and firms with low-leverage, high stock returns or high stock volatility all appear more likely to significantly underpay taxes.

The tax underpayment response is unlikely to be the same across the distributions of cash holdings or net cash flows as the specification in Column 1 assumes. A funding needs explanation predicts that a proactive tax underpayment becomes more likely as the firm approaches a discrete point indicative of an actual cash need. We use cash shortfalls to capture this concept.

4.2. The importance of immediate cash needs – evidence from cash shortfalls

In our study, we define a firm as having a cash shortfall event if it expects a net cash flow (NCF) deficit (e.g., Denis and McKeon 2021) or immediate cash depletion (e.g., Huang and Ritter 2021). An expected NCF deficit event occurs when operating cash flow at predicted cash taxes less lagged capital expenditures and dividends is negative. An immediate depletion event occurs if the net cash flow deficit defined above exhausts the stock of cash at the beginning of the year.

Table 2 Panel B reports summary statistics for the sample sorted on the NCF deficit and immediate depletion shortfall proxies. Firms experience NCF deficits (immediate depletion) in about 29.8% (13.5%) of the sample years. Proactive tax underpayments are 10.2% to 13.5% more likely in cash shortfall years (e.g., from Columns 1 and 2, 0.109 / 0.096 – 1 = 0.135). Consistent with prior literature, traditional external financing is also more aggressive in shortfall states ($\Delta D_{CF\ t}$ / $Assets_{t-1}$ and $\Delta E_{CF\ t}$ / $Assets_{t-1}$) as is supplier financing (ΔAP_t / $Assets_{t-1}$). The magnitudes of funds raised from these sources in shortfall years are several times greater than in non-shortfall years. While firms facing a shortfall tend to be smaller, more highly leveraged, and riskier, this does not make them constrained. Consistent with the patterns of external financing described above, 67.9% (60.6%) of immediate depletion (NCF deficit) firms are objectively *unconstrained* using the approach of van Binsbergen et al. (2010).

Returning to Table 3, Columns 2 and 3 report the results from discrete choice regressions that expand Eq. (2) to include a cash shortfall indicator. From Column 2, the probability that the firm proactively underpays taxes is 0.023 higher when the firm faces an NCF deficit in the same year ($p < 0.001$). Relative to the probability of a tax underpayment event for non-deficit firms of 0.096 (Table 2, Panel B, Column 2), this implies a 24% increase in the likelihood of a large tax underpayment (0.023 / 0.096). Turning to a more aggressive measure of cash needs defined by immediate depletion (Column 3), the shortfall firm has a 0.021 higher probability of underpaying taxes ($p < 0.001$), representing a 21.4% increase relative to non-shortfall firms (0.021 / 0.098). One potential reason for the weaker response to immediate cash depletion is that taxes alone cannot address the significant cash needs implied by depletion.

The evidence in Table 3 is consistent with the conclusion in prior literature that firms needing external financing also do more tax planning. The sensitivity of proactive tax underpayment to immediate cash needs appears to be statistically significant, implying that firms secure additional cash from the tax authority when facing a cash shortfall. However, this result is not necessarily a story of financial constraints; cash shortfalls occur frequently in unconstrained firms. This leaves unanswered questions relevant to the interpretation of tax financing. In the next section, we examine how firms' tax response to cash shortfalls varies across potential financial constraints.

4.3. Evidence from firms' access to external capital markets

To this point, the discussion focuses on sensitivity to expected cash shortfall situations. However, evidence that firms appear to adjust tax payments in response to cash needs is not evidence that firms do this only when external financing is costly. The evidence in Table 3 effectively suggests no association between proactive tax underpayments and simultaneous debt

or equity issuances, but a positive association with supplier financing. The following tests examine how tax underpayment responses vary along sorts for access to and cost of external financing.

The concept of a financial constraint implies that a firm has a cash need (e.g., planned investment that cannot be funded with operating cash flows) but faces a marginal cost of external funds that renders the project negative NPV. The potential for financial constraints to impede investment is cited as one reason firms build up cash balances (Denis and Sibilkov 2010). An extensive literature attempts to identify firms with financial constraints using coarse firm attributes (size, age, or dividend policy), model-based approaches, and specific disclosures.

A key element of the financial constraints explanation is that the firm's external financing options are so costly that managers turn to the tax authority to satisfy cash needs as a last resort (e.g., Law and Mills 2015). In Table 4, we approach the firm's ex ante potential for financial constraints by sorting on intuitive proxies for the firm's marginal cost debt or equity. While we cannot directly observe each firm's marginal cost of financing, we can observe *ex ante* proxies for them through debt capacity and market valuations. Managers going into the period with high leverage or low equity valuations should expect to face high marginal costs of new external funds from these sources.

Panel A reports the results from models estimated separately based on the firm's beginning debt-to-assets ratio relative to the industry-year median. Panel B provides a similar sort based on the market-to-book ratio. If financial constraints drive the findings in Table 4, then the proactive tax underpayment response to cash needs should be increasing in the firm's ex ante cost of accessing external capital (i.e., increasing in leverage and decreasing in market valuations).

Our results suggest that, if anything, firms with high marginal costs of external financing are less likely to respond to cash needs by underpaying taxes. Throughout Table 4, the low financing

cost samples display the strongest proactive tax underpayment responses to cash shortfalls. For example, the probability that a low-leverage firm will materially underpay cash taxes is 0.026 higher in the presence of immediate cash depletion (Table 4, Panel A, Column 4). Similarly, the probability that a high market-to-book firm will do the same is 0.033 higher (Table 4, Panel B, Column 4) if the firm is in a state of immediate depletion. Results on NCF deficits (Column 2) are similar or stronger, while results for high leverage and low market-to-book (Columns 1 and 3) are always weaker.[17] Firms appear most likely to address cash needs with tax savings when facing low financing costs. Interestingly, while the response to the shortfall is weaker or non-existent for the high financing cost samples, their sensitivity to cash holding is not in the market-to-book sort. Among low market-to-book firms, the estimated shortfall coefficient ranges from -0.029 to -0.036. This suggests that a 0.10 increase in the firm's cash-to-assets ratio elicits a 0.003 to 0.004 decrease in the probability of a proactive tax underpayment that is unrelated to *immediate* cash needs. This potentially reflects managers' intentional stockpiling of cash as a buffer to future shortfalls when external financing is costly (Denis and Sibilkov 2010) and aggressive tax underpayments are difficult to obtain.

In Table 5, we approach the financial constraints interpretation using ex post financing realizations. Specifically, we follow the approach used by van Binsbergen et al. (2010) that identifies unconstrained firms based on their transactions with external capital markets. A firm that raises material funds from (or returns funds to) investors is objectively unconstrained. We define a firm as unconstrained (UNCF) if its debt issues, debt repayments, equity issues, or equity

[17] We also conduct t-tests to compare the coefficients of the shortfall variable between high and low ex ante cost of financing groups. The results provide statistically significant evidence that the coefficient on NCF deficit for firms with high leverage is less than that for firms with low leverage, supporting the notion of differential effects across leverage groups. We also find a statistically significant evidence that the coefficient on immediate depletion for firms with low market-to-book is less than that for firms with high market-to-book.

repurchases (scaled by beginning assets) are in the top quartile for the year. In our sample, 64.7% of firm-years have unconstrained financing, meaning that in any given year, nearly two-thirds of firms will be in the top 25% of all firms in that year in at least one of the four financing measures. If a financial constraints explanation dominates tax responses to funding needs, proactive tax underpayments should not respond to cash shortfalls in an unconstrained sample. Among the remaining firms, some will likely be constrained, while others will not, as they have no reason to engage with external capital markets. We do not distinguish between these groups.

Table 5 reports the results from our baseline regression estimated separately for unconstrained and other firms. From Column 1, the unconstrained financing group responds significantly to NCF deficits (coeff = 0.017, $p < 0.001$), implying an 18% increase in the probability of proactive tax underpayments relative to the unconditional probability of 0.096 reported in Table 2 Panel B. In Column 3, the effect of immediate depletion is similar among the unconstrained firms (coeff = 0.018, $p = 0.002$). Importantly, tax underpayment responses are stronger in the remaining samples (Columns 2 and 4). There are at least two possible explanations for this: 1) they were able to meet cash needs with tax savings alone (without resorting to available debt or equity), and 2) they were constrained and could only meet cash needs with tax savings. We do not know what fraction of these firms are truly constrained, only that they did not make it into the top quartile of any of the four financing measures during the year. Our results point to managers underpaying taxes in years when they face a strong cash need. These reactions are as strong or stronger in firms with ex ante external financing capacity and do not appear limited to constrained firms ex post.

4.4. Tax savings vs. external financing activity

To round out our examination of firms' use of taxes as a financial instrument, we examine i) how the sensitivity of tax underpayments to cash shortfalls compares to the sensitivities of debt,

equity, and supplier financing. and ii) how the firm's tax response to shortfalls depends on contemporaneous cash used by or raised from these other sources.

We report the results from regressions of proactive tax underpayments, debt issues, equity issues, and supplier financing on cash shortfalls in Table 6, Panel A. The dependent variable is an indicator variable equal to 1 if the relevant financing source (tax underpayment, debt, equity, or trade credit) is in the top decile of funds raised (relative to beginning assets) for that year. Columns 1 and 2 repeat the results from Table 3 for ease of comparison. Proactive debt issues (Columns 3 and 4) and supplier financing (Columns 7 and 8) respond to cash shortfalls as expected. However, in contrast to large tax underpayments, they are decreasing in beginning stocks of cash and net cash flows (controlling for a shortfall). As firms raise either debt or equity, they also expand trade credit, consistent with firms relying on both suppliers and capital markets to finance investment in operating assets. Taken together, Panel A uses debt, equity, and supplier financing as a benchmark for understanding firms' use of taxes to raise cash. In short, while taxes appear to be a part of the firm's financing options, their response to cash needs appears much weaker than other financing options like debt and trade credit.

In Table 6, Panel B, we interact each of the shortfall variables with continuous measures of cash sources and uses. The objective of this analysis is to understand whether a firm's sensitivity to a shortfall depends on the degree of the shortfall (reflected in cash holdings and net cash flows) and simultaneous financing decisions (reflected in debt, equity, and trade credit). The main effect of a shortfall estimates the average increase in the probability of a given significant financing decision when other sources and uses of cash are zero. This interaction structure allows us to gauge whether and how other sources of cash attenuate the shortfall situation. Moreover, the main effects

of cash sources and uses estimate the sensitivity of proactive financing decisions to these cash flows in non-shortfall states.

For purposes of this discussion, we focus on the NCF deficit results in odd columns. Column 1 indicates that tax underpayments respond to shortfalls, and that this response appears to be independent of cash sources and uses, with the exception of NCF and equity. A firm that just moves into an NCF deficit will have a 0.023 higher probability of a proactive tax underpayment. However, as the deficit increases to -0.087 (the average for NCF deficit firms), the probability increases by 0.011 (-0.125 × -0.087) to 0.034, representing a 34% higher probability of a proactive tax underpayment relative to the sample underpayment frequency (0.034 / 0.100). Firms in shortfall states are less likely to underpay taxes if they are also issuing equity (coeff. = -0.061, p = 0.006). This moderating effect of equity issues is also present in debt issues (Column 3) and is consistent with firms raising excess cash when going to equity markets (Huang and Ritter 2021).

Relative to the tax underpayment decision, contemporaneous net cash flows exert a much stronger moderating influence on the firms' responses to shortfalls for debt, equity, and trade credit. For example, Column 3 indicates that a firm just tripping the NCF deficit threshold will have a 0.057 greater probability of a proactive debt issue. Moreover, as the NCF deficit deepens to the mean of -0.087 for deficit firms, the incremental probability of a debt issue rises by 0.047 (-0.542 × -0.087) to 0.104, nearly doubling the expected likelihood of a large debt issue. Proactive supplier financing increases (Column 7) respond at roughly the same intensity as proactive debt issues. Large equity issues appear less sensitive than debt or trade credit to immediate cash needs but more sensitive than tax underpayments. This is consistent with debt issuers having the strongest short-lived cash needs (Huang and Ritter 2021). Finally, large debt, equity, and supplier financing

responses to NCF deficits do appear smaller when the firm is simultaneously underpaying taxes. This suggests some substitution between unexpected cash raised from (paid to) the tax authority.

Interestingly, the explanatory power of the shortfall regressions that explain proactive debt issues, equity issues, and trade credit increases is several times greater than those that explain tax underpayments (*r*-squared of 0.057, 0.126, and 0.164 vs. 0.030 for NCF deficits). Overall, this evidence suggests that while the tax underpayment response to cash needs is statistically significant, it is modest and unlikely to generate (on its own) the funding required by a firm with material external funding needs.

5. CONCLUSION

This paper examines whether firms facing immediate cash needs proactively reduce cash tax outflows. We approach the question from a novel but intuitive angle, focusing on the importance of the firm's immediate cash needs and the materiality of the tax underpayment. We cast the firm's financing needs and tax response as a function of expected cash shortfalls. We implement an asset-scaled estimate of cash tax that can be more directly compared to external cash sources and uses commonly examined in the literature.

Our results offer a novel perspective on financing-based theories of tax planning and compliance. Almost 17% of firms with a proactive tax underpayment would have run into a cash deficit without the cash generated from tax savings. Firms proactively save cash taxes when facing cash shortfalls. We find evidence that firms engage in these actions when they are unconstrained—issuing or retiring large amounts of debt or equity—and more robust evidence when firms likely face low marginal costs of external financing (low leverage and high market values). However,

compared to debt, equity, and even supplier financing responses, the capacity for and use of tax underpayments to meet funding needs remain relatively small.

The pattern of results documented in this paper also supports the idea that managers view tax savings as a financing option (an interpretation consistent with California firms' uptake of the 2023 tax relief). The results do not support the conclusion that taxpayers engage in this behavior primarily or exclusively when they are financially constrained. All firms have the option, and unconstrained firms may be in the best position to take advantage of tax financing given their relatively higher tax burdens. This is important given the evidence that lenders price the volatility of tax payments and the liabilities incurred from tax reduction strategies. This also has implications for policies based on the assumption that financial constraints drive aggressive tax planning behavior.

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Figure 1 – Cash shortfalls (funding needs) versus financial constraints

This figure depicts the conditions for cash shortfalls versus financial constraints and represents the shortfall as a necessary but not sufficient condition for the existence of financial constraints. The key point is that a financially constrained firm must face a cash need (otherwise, they would not be constrained), but a firm with a cash need is not necessarily constrained.

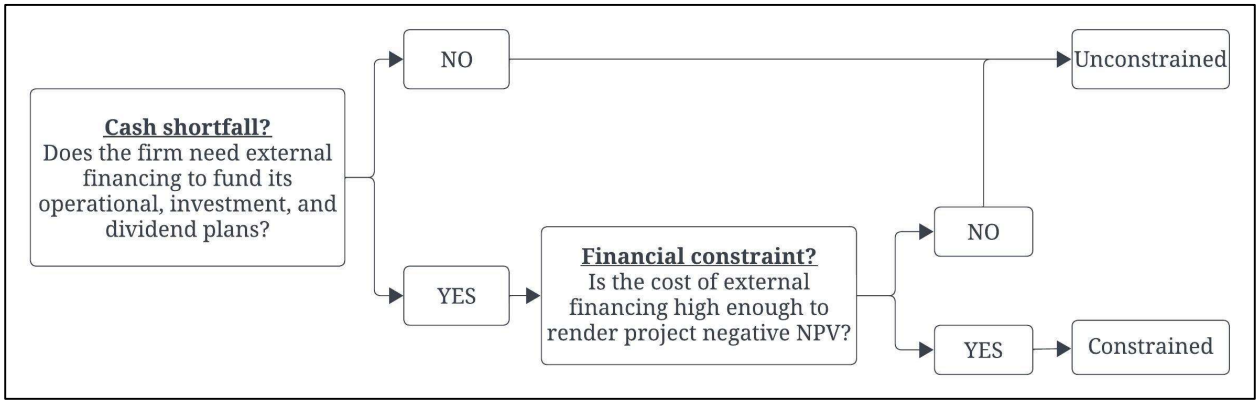

Figure 2 – California firms' reactions to the 2023 disaster relief tax payment interest waiver

This figure demonstrates how firms respond to unexpected shocks to the cost of borrowing from the government using the disaster relief offered to California headquartered firms during 2023. The relief, first announced in January 2023, allowed firms to delay making estimated tax payments until October 2023 (later November). The figures plot the average cash taxes paid for quarters before 2023 (beginning in 2018) and for each fiscal quarter ending in the period shown. The sample includes firms that report cash taxes on a quarterly basis. The "borrowing" window is shown by the blue rectangle, followed by the repayment period.

Figure 2a

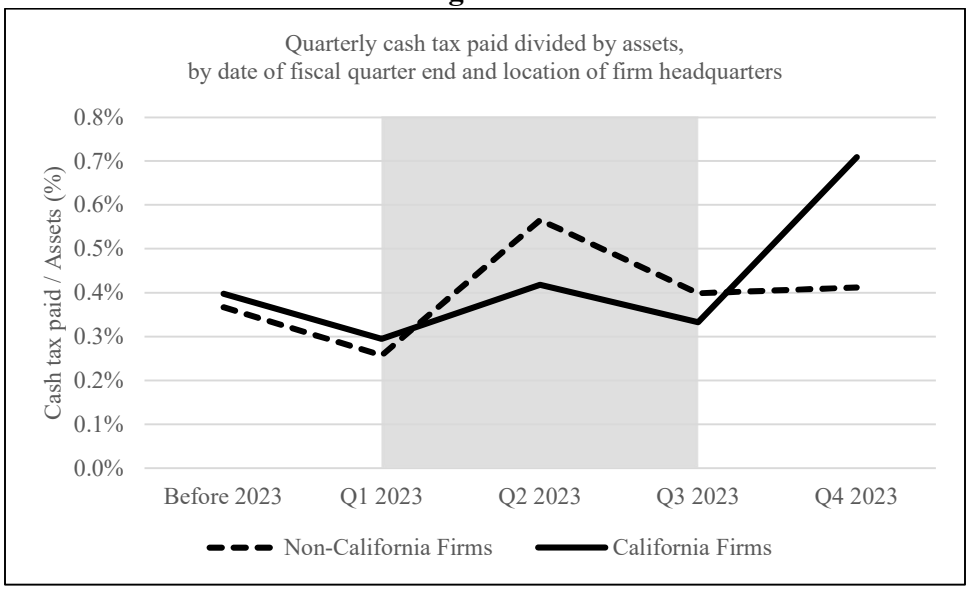

Figure 2b

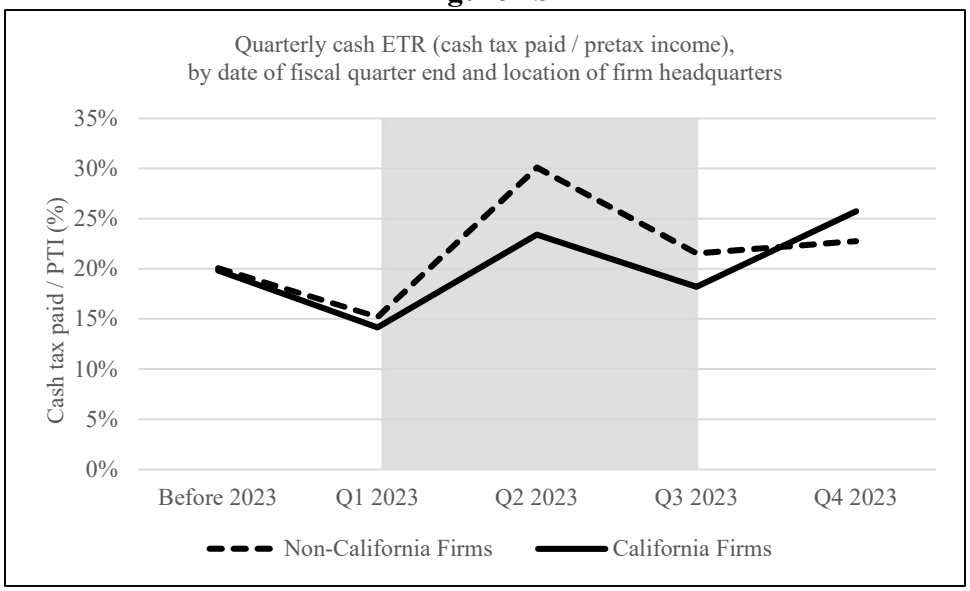

Figure 3 – Interest rate on tax underpayments

The following figure plots interest rates for regulators and large underpayments over time and against the yield on BAA-rated issues. See Appendix E for details on how the rate is calculated.

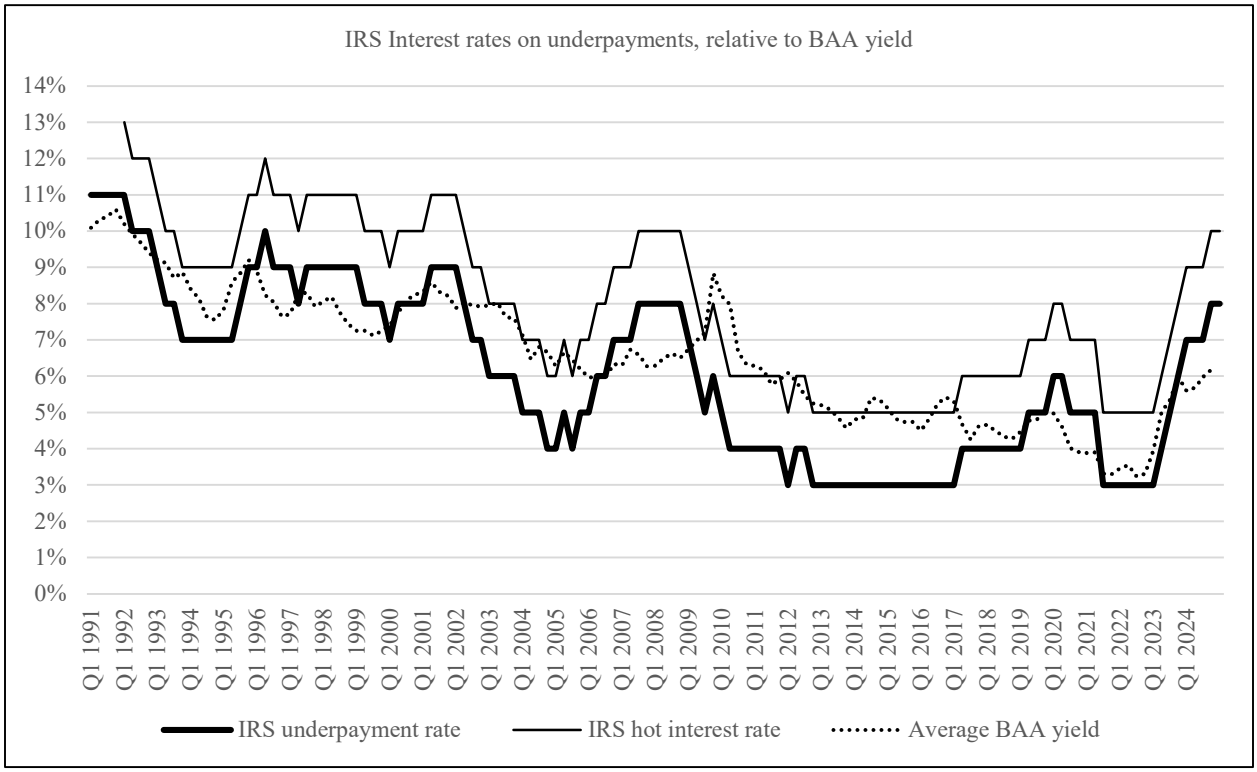

Figure 4 – Tax savings in response to financial constraints: Constraints-driven (4a) vs. cash needs-driven (4b)

The left figure (4a) depicts the prediction that tax savings are used as a last resort to address financial constraints. The right figure (4b) depicts the prediction in this paper that tax savings are used to address cash needs and need not be delayed until the firm reaches financial constraints. Point A represents the exhaustion of internal funds. Point B represents the point at which the firm reaches financial constraints as traditionally defined.

Figure 4a

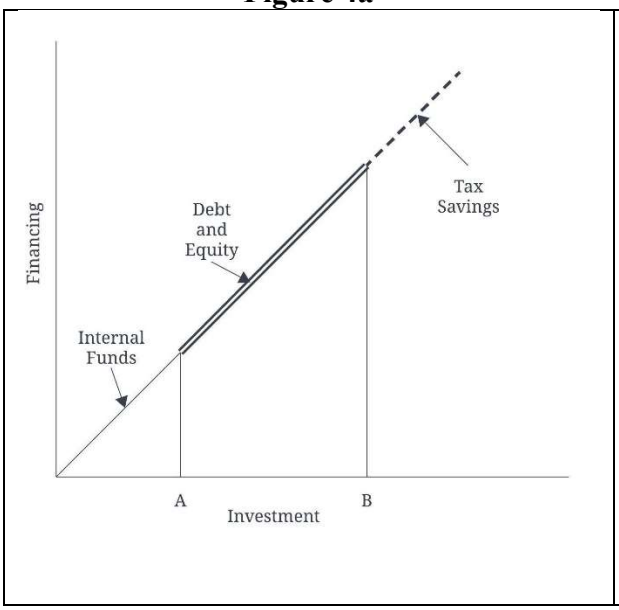

Figure 4b

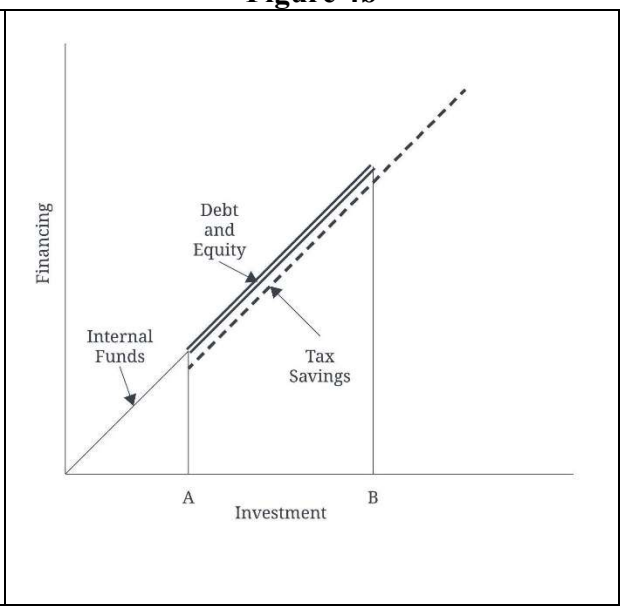

Table 1 – Expected tax payment

This table reports summary statistics from a model predicting cash tax payments. Panel A provides the summary statistics on key inputs. Panel B reports the summary statistics of industry-level regressions of the tax prediction model described in Eq. (1). The negative of the demeaned residuals represents tax underpayments. All regressions are estimated with firm and year fixed effects. Standard errors are robust and clustered at the firm level. Variables defined in Appendix A.

Panel A: Descriptive statistics

N = 66,052	Mean	S.D.	% > 0	25%	50%	75%
Cash taxes$_t$ / Assets $_{t-1}$	0.028	0.031	91.1%	0.005	0.019	0.041
PTI$_t$ / Assets$_{t-1}$	0.117	0.094	100.0%	0.049	0.094	0.156
NOL benefit$_{t-1}$ / Assets$_{t-1}$	0.036	0.067	87.5%	0.004	0.010	0.030
Available NOL benefit	0.010	0.012	87.5%	0.003	0.007	0.013
Excess NOL benefit	0.026	0.062	37.6%	0	0	0.013

Panel B: Key model parameter estimates

N = 43	Mean	S.D.	% > 0	25%	50%	75%
PTI$_t$ / Assets $_{t-1}$	0.258	0.041	100.0%	0.226	0.266	0.288
PTI$_t$ / Assets$_{t-1}$ × TCJA	-0.094	0.058	7.0%	-0.123	-0.104	-0.076
NOL benefit$_{t-1}$ / Assets$_{t-1}$						
Available NOL benefit	-0.648	0.229	0.0%	-0.733	-0.631	-0.533
Avail. NOL ben. × TCJA	0.380	0.349	90.7%	0.124	0.337	0.672
Excess NOL benefit	0.010	0.223	18.6%	-0.042	-0.026	-0.008
Excess NOL ben. × TCJA	0.037	0.238	51.2%	-0.032	0.001	0.032
TCJA	0.004	0.013	72.1%	0.000	0.007	0.013
N	43	43	43	43	43	43
R^2	0.664	0.111		0.601	0.678	0.739

Table 2 – Firm characteristics by profitability and tax underpayment

This table reports mean values of firm-year characteristics for the sample. The primary sample of profitable firms is reported in Panel A Columns 1 through 3. Column 2 includes all firms with tax underpayment in the top 10% of that year (proactive tax underpayment sample). Column 3 includes all other profitable firms. Column 4 reports the two-tailed *p*-value of the difference between the means of Columns 2 and 3. Column 5 reports the values for the excluded sample of unprofitable firms. Panel B reports the summary statistics for key variables by cash shortfall status in year *t*. The left panel defines cash shortfall using NCF deficit following Denis and McKeon (2021), where a shortfall occurs if net cash flows before tax underpayment is less than zero. The right panel defines cash shortfall using immediate depletion following Huang and Ritter (2021), where depletion occurs if beginning cash plus expected net cash flows (before tax underpayment) is less than zero. Average values are reported along with the *p*-values from two-tailed *t*-tests of differences in means. Variables are defined in Appendix A.

Panel A: Sample averages by proactive tax underpayment

		$PTI_t > 0$			$PTI_t \leq 0$
	All	Proactive tax underpayment	All others	(2) minus (3) (*p*-value)	All
	(1)	(2)	(3)	(4)	(5)
N	66,052	6,591	59,461		28,840
Tax attributes					
Cash tax residual$_t$	0.000	-0.026	0.003	(<0.001)	
Cash taxes$_t$ / Assets$_{t-1}$	0.028	0.014	0.030	(<0.001)	0.002
Cash ETR$_t$	0.245	0.111	0.258	(<0.001)	
GAAP ETR$_t$	0.304	0.289	0.306	(<0.001)	
UTB current increase$_t$[#]	0.182	0.195	0.180	(0.123)	0.172
Financial policy attributes					
Cash$_t$ < 0 (0,1)					
before tax underpayment	0.046	0.161	0.033	(<0.001)	
before ext. financing	0.177	0.150	0.180	(<0.001)	0.248
Cash$_{t-1}$ / Assets$_{t-1}$	0.150	0.187	0.146	(<0.001)	0.292
ΔCash$_t$ / Assets$_{t-1}$	0.027	0.072	0.022	(<0.001)	0.018
Debt $_{t-1}$ / Assets$_{t-1}$	0.223	0.181	0.228	(<0.001)	0.239
$\Delta D_{CF\ t}$ / Assets$_{t-1}$	0.022	0.026	0.021	(0.006)	0.031
Debt issues$_t$ / Assets$_{t-1}$	0.135	0.134	0.135	(0.823)	0.121
Debt repayments$_t$ / Assets$_{t-1}$	0.109	0.104	0.110	(0.041)	0.087
$\Delta E_{CF\ t}$ / Assets$_{t-1}$	0.009	0.030	0.006	(<0.001)	0.147
Equity issues$_t$ / Assets$_{t-1}$	0.032	0.057	0.029	(<0.001)	0.153
Equity repurchases$_t$ / Assets$_{t-1}$	0.023	0.027	0.023	(<0.001)	0.005
ΔAP$_t$ / Assets$_{t-1}$	0.011	0.016	0.011	(<0.001)	0.005
Dividends$_t$ > 0 (0,1)	0.424	0.360	0.431	(<0.001)	0.073
Unconstrained (0,1)	0.647	0.679	0.643	(<0.001)	0.593
Other firm attributes					
NCF deficit$_t$ (0,1)	0.298	0.326	0.295	(<0.001)	
Immediate depletion$_t$ (0,1)	0.135	0.147	0.134	(0.004)	
NCF^{TA}_t / Assets$_{t-1}$	0.034	0.038	0.034	(0.002)	
OCF$_t$ / Assets$_{t-1}$	0.116	0.154	0.112	(<0.001)	-0.104
Capex$_t$ / Assets$_{t-1}$	0.067	0.072	0.066	(<0.001)	0.050
R&D$_t$ / Assets$_{t-1}$	0.033	0.045	0.032	(<0.001)	0.118
Assets$_t$ ($M)	3,357.9	2,561.5	3,446.1	(<0.001)	780.9
Market-to-book$_t$	1.970	2.489	1.912	(<0.001)	2.135
Z-score$_t$	2.020	2.266	1.993	(<0.001)	-2.032
Stock return$_t$	0.222	0.370	0.205	(<0.001)	-0.017
Stock volatility$_t$	0.123	0.137	0.122	(<0.001)	0.207

[#] N = 18,980. UTB data is only available for years 2007 and after.

Table 2 (continued)

Panel B: Sample averages by cash shortfall

	NCF deficit ($NCF^{TA}_t < 0$)			Immediate depletion ($Cash_{t-1} + NCF^{TA}_t < 0$)		
	Yes	No	*p*-value	Yes	No	*p*-value
	(1)	(2)	(3)	(4)	(5)	(6)
N	19,714	46,338		8,935	57,117	
Proactive tax underpayment (0,1)	0.109	0.096	(<0.001)	0.108	0.098	(0.004)
NCF^{TA}_t / $Assets_{t-1}$	-0.087	0.086	(<0.001)	-0.134	0.061	(<0.001)
$Cash_{t-1}$/ $Assets_{t-1}$	0.124	0.161	(<0.001)	0.038	0.167	(<0.001)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	0.050	0.010	(<0.001)	0.074	0.014	(<0.001)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.034	-0.002	(<0.001)	0.047	0.003	(<0.001)
ΔAP_t / $Assets_{t-1}$	0.029	0.004	(<0.001)	0.038	0.007	(<0.001)
$Assets_{t-1}$	2,052.1	3,651.5	(<0.001)	1,624.7	3,416.6	(<0.001)
OCF_t / $Assets_{t-1}$	0.047	0.146	(<0.001)	0.036	0.129	(<0.001)
$Capex_t$ / $Assets_{t-1}$	0.091	0.056	(<0.001)	0.110	0.060	(<0.001)
$Dividends_t$ / $Assets_{t-1}$	0.010	0.013	(<0.001)	0.007	0.013	(<0.001)
$R\&D_t$ / $Assets_{t-1}$	0.026	0.036	(<0.001)	0.015	0.036	(<0.001)
Market-to-$book_{t-1}$	1.726	2.127	(<0.001)	1.599	2.071	(<0.001)
$Debt_{t-1}$ / $Assets_{t-1}$	0.235	0.218	(<0.001)	0.295	0.212	(<0.001)
$Dividend_t > 0$ (0,1)	0.400	0.435	(<0.001)	0.376	0.432	(<0.001)
Unconstrained (0,1)	0.606	0.664	(<0.001)	0.679	0.642	(<0.001)
Stock $return_t$	0.170	0.244	(<0.001)	0.191	0.227	(<0.001)
Stock $volatility_t$	0.132	0.119	(<0.001)	0.135	0.121	(<0.001)

Table 3 – The sensitivity of proactive tax underpayment to cash needs

This table reports the results from linear probability models of the likelihood of proactive tax underpayment on proxies for cash needs, alternative cash sources, and control variables. We define the dependent variable proactive tax underpayment as equal to one if tax underpayment is in the top 10% of that year. Column 1 excludes the shortfall indicator. The cash shortfall indicator is defined as expected NCF deficit (NCF_t (tax adj.) < 0) in Column 2 and immediate depletion ($Cash_{t-1}$ + NCF_t (tax adj.) < 0) in Column 3. The regressions are estimated only on the sample of profitable firms. All regressions are estimated with industry and year fixed effects. Standard errors are robust and clustered by firm. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses.

Dependent variable	Proactive tax underpayment (0,1)		
	(1)	(2)	(3)
NCF deficit (0,1)		0.023	
		(<0.001)	
Immediate depletion (0,1)			0.021
			(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.009	-0.009	-0.001
	(0.443)	(0.419)	(0.938)
NCF^{TA}_t / $Assets_{t-1}$	-0.043	0.015	-0.013
	(0.003)	(0.390)	(0.429)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	-0.001	-0.004	-0.005
	(0.891)	(0.686)	(0.642)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.007	0.008	0.007
	(0.563)	(0.501)	(0.527)
ΔAP_t / $Assets_{t-1}$	0.086	0.085	0.081
	(0.024)	(0.026)	(0.034)
Ln($Assets_{t-1}$)	-0.009	-0.008	-0.008
	(<0.001)	(<0.001)	(<0.001)
Market-to-$book_{t-1}$	0.020	0.019	0.019
	(<0.001)	(<0.001)	(<0.001)
$Debt_{t-1}$ / $Assets_{t-1}$	-0.053	-0.053	-0.055
	(<0.001)	(<0.001)	(<0.001)
$Dividend_t > 0$	0.000	0.000	0.000
	(0.963)	(0.976)	(0.923)
Stock $return_t$	0.035	0.035	0.035
	(<0.001)	(<0.001)	(<0.001)
Stock $volatility_t$	0.100	0.096	0.100
	(<0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052
R^2	0.0285	0.0292	0.0288

Table 4 – Sensitivity of proactive tax underpayment to cash needs by external financing capacity

This table reports the results from linear probability models of proactive tax underpayment on proxies for cash needs, alternative cash sources, and control variables. Columns 1 and 2 report the results for the cash shortfall indicator defined as expected NCF deficit (NCF_t (tax adj.) < 0). Columns 3 and 4 the results for the cash shortfall indicator defined as immediate depletion ($Cash_{t-1}$ + NCF_t (tax adj.) < 0). In Panel A, we estimate the regression from Table 3 separately for firms sorted on whether they are above or below industry-year median debt-to-assets. In Panel B, the sort is on above or below industry-year median market-to-book. All regressions include control variables reported in Table 3 and industry and year fixed effects. Standard errors are robust and clustered by firm. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses. We also report the *p*-value from one-tailed t-tests of differences in coefficients of cash shortfall between the above- and below-median groups.

Panel A: Sensitivity of tax underpayment to cash needs conditional on starting book leverage

Dependent variable (0,1)	Proactive tax underpayment (0,1)			
Industry-adjusted leverage at beginning of year	Above median	Below median	Above median	Below median
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.018	0.029		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.020	0.026
			(0.001)	(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.028	0.010	-0.017	0.017
	(0.205)	(0.500)	(0.445)	(0.227)
NCF^{TA}_t / $Assets_{t-1}$	0.015	-0.008	0.005	-0.048
	(0.505)	(0.736)	(0.826)	(0.027)
p-value (Ab. < Bel.) Shortfall	0.073		0.486	
N	33,030	33,022	33,030	33,022
R^2	0.028	0.031	0.028	0.030

Panel B: Sensitivity of tax underpayment to cash needs conditional on starting market-to-book ratio

Dependent variable (0,1)	Proactive tax underpayment (0,1)			
Industry-adjusted market-to-book beginning of year	Below median	Above median	Below median	Above median
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.021	0.030		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.012	0.033
			(0.032)	(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.036	0.006	-0.029	0.016
	(0.032)	(0.695)	(0.083)	(0.289)
NCF^{TA}_t / $Assets_{t-1}$	0.000	-0.005	-0.040	-0.028
	(0.982)	(0.838)	(0.062)	(0.191)
p-value (Bel. < Ab.) Shortfall	0.113		0.021	
N	33,012	33,040	33,012	33,040
R^2	0.026	0.033	0.026	0.033

Table 5 – Sensitivity of proactive tax underpayment to cash needs for unconstrained firms

In this table, we estimate the regression from Table 3 separately for firms sorted on whether or not they have unconstrained financing activity (UNCF). We follow van Binsbergen, Graham, and Yang (2010) and define a firm as having unconstrained financing if the firm has debt issues, debt repayments, equity issues, or equity repurchases (all scaled by beginning assets) are in the top quartile for a given year. The sample in Columns 1 and 3 demonstrate unconstrained activity, while the sample in Columns 2 and 4 do not demonstrate unconstrained activity. Columns 1 and 2 report the results for the cash shortfall indicator defined as expected NCF deficit (NCF_t (tax adj.) < 0). Columns 3 and 4 the results for the cash shortfall indicator defined as immediate depletion ($Cash_{t-1}$ + NCF_t (tax adj.) < 0). All regressions include control variables reported in Table 3 and industry and year fixed effects. Standard errors are robust and clustered by firm. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses. We also report the *p*-value from one-tailed t-tests of differences in coefficients of cash shortfall between the above- and below-median groups.

Dependent variable (0,1)	Proactive tax underpayment (0,1)			
Unconstrained financing activity per UNCF?	Yes	No	Yes	No
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.017	0.032		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.018	0.027
			(0.002)	(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.005	-0.020	0.002	-0.008
	(0.733)	(0.240)	(0.916)	(0.641)
NCF^{TA}_t / $Assets_{t-1}$	0.021	-0.042	0.007	-0.098
	(0.328)	(0.192)	(0.734)	(<0.001)
p-value (Yes < No) Shortfall	0.029		0.165	
N	42,726	23,326	42,726	23,326
R^2	0.035	0.026	0.035	0.025

Table 6 – Raising cash from tax savings versus debt, equity, and trade credit

This table reports the results from linear probability models of the impact of cash shortfall, beginning cash, net cash flow, changes in financing activity, and the related interaction terms on different methods a firm may utilize to access capital. In Panel A, we estimate the regressions with only main effects, and in Panel B, we estimate the models with both main effects and interaction terms. The dependent variables are indicator variables equal to 1 if the firm engages in proactive tax underpayment in the top decile (Cols 1-2), $\Delta D_{CF\,t}$ / $Assets_{t-1}$ in the top decile (Cols 3-4), $\Delta E_{CF\,t}$ / $Assets_{t-1}$ in the top decile (Cols 5-6), or ΔAP_t / $Assets_{t-1}$ in the top decile (Cols 7-8) for the year. Odd columns report the results for the cash shortfall indicator defined as NCF deficit. Even columns define the cash shortfall indicator as immediate depletion. All regressions include control variables reported in Table 3 and industry and year fixed effects. Standard errors are robust and clustered by firm. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses.

Panel A: Multivariate regression with main effects

Dependent variable	Proactive tax underpayment (0,1)		Proactive net debt issues (0,1)		Proactive net equity issues (0,1)		Proactive trade credit increase (0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NCF deficit (0,1)	0.023		0.030		0.008		0.053	
	(<0.001)		(<0.001)		(0.031)		(<0.001)	
Imm. depletion (0,1)		0.021		0.078		0.032		0.043
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.009	-0.001	-0.144	-0.114	0.031	0.044	-0.049	-0.032
	(0.419)	(0.938)	(<0.001)	(<0.001)	(0.011)	(<0.001)	(<0.001)	(0.002)
NCF^{TA}_t / $Assets_{t-1}$	0.015	-0.013	-0.151	-0.111	-0.212	-0.186	-0.516	-0.585
	(0.390)	(0.429)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	-0.004	-0.005			0.000	-0.004	0.293	0.291
	(0.686)	(0.642)			(0.996)	(0.744)	(<0.001)	(<0.001)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.008	0.007	-0.054	-0.053			0.109	0.108
	(0.501)	(0.527)	(<0.001)	(<0.001)			(<0.001)	(<0.001)
ΔAP_t / $Assets_{t-1}$	0.085	0.081	0.982	0.960	0.377	0.370		
	(0.026)	(0.034)	(<0.001)	(<0.001)	(<0.001)	(<0.001)		
Tax und. / $Assets_{t-1}$			-0.288	-0.286	0.300	0.300	-0.494	-0.480
			(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052	66,052	66,052	66,052	66,052	66,052
R^2	0.029	0.029	0.050	0.054	0.124	0.125	0.157	0.155

Table 6 (continued)

Panel B: Multivariate regression with main effects and interaction terms

Dependent variable	Proactive tax underpayment (0,1)		Proactive debt issue (0,1)		Proactive equity issue (0,1)		Proactive trade credit increase (0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NCF deficit (0,1)	0.023		0.057		0.024		0.055	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	
× $Cash_{t-1}$ / $Assets_{t-1}$	0.013		-0.160		-0.094		0.010	
	(0.496)		(<0.001)		(<0.001)		(0.639)	
× NCF^{TA}_t / $Assets_{t-1}$	-0.125		-0.542		-0.246		-0.561	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	
× $\Delta D_{CF\,t}$ / $Assets_{t-1}$	0.002				-0.046		0.118	
	(0.911)				(0.099)		(<0.001)	
× $\Delta E_{CF\,t}$ / $Assets_{t-1}$	-0.061		-0.041				0.044	
	(0.006)		(0.037)				(0.084)	
× ΔAP_t / $Assets_{t-1}$	-0.041		-0.512		-0.170			
	(0.590)		(<0.001)		(0.039)			
× Tax u. / $Assets_{t-1}$			-0.361		-0.730		-0.369	
			(0.053)		(<0.001)		(0.072)	
Imm. depletion (0,1)		0.017		0.070		0.032		0.025
		(0.002)		(<0.001)		(<0.001)		(<0.001)
× $Cash_{t-1}$ / $Assets_{t-1}$		0.181		-0.333		-0.183		0.270
		(0.035)		(<0.001)		(0.057)		(0.022)
× NCF^{TA}_t / $Assets_{t-1}$		0.044		-0.467		-0.218		-0.108
		(0.255)		(<0.001)		(<0.001)		(0.037)
× $\Delta D_{CF\,t}$ / $Assets_{t-1}$		-0.007				-0.143		0.030
		(0.773)				(<0.001)		(0.361)
× $\Delta E_{CF\,t}$ / $Assets_{t-1}$		0.010		-0.112				0.046
		(0.715)		(<0.001)				(0.100)
× ΔAP_t / $Assets_{t-1}$		0.105		-0.566		-0.122		
		(0.169)		(<0.001)		(0.164)		
× Tax u. / $Assets_{t-1}$				-0.675		-0.690		0.267
				(0.026)		(0.017)		(0.405)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.015	-0.002	-0.112	-0.113	0.051	0.045	-0.058	-0.034
	(0.226)	(0.861)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.001)
NCF^{TA}_t / $Assets_{t-1}$	0.075	-0.013	0.101	-0.003	-0.097	-0.133	-0.184	-0.526
	(0.007)	(0.525)	(<0.001)	(0.870)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	-0.007	-0.002			0.012	0.028	0.234	0.284
	(0.614)	(0.864)			(0.484)	(0.073)	(<0.001)	(<0.001)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.033	0.004	-0.038	-0.027			0.088	0.095
	(0.033)	(0.739)	(0.003)	(0.018)			(<0.001)	(<0.001)
ΔAP_t / $Assets_{t-1}$	0.096	0.040	1.198	1.141	0.441	0.402		
	(0.113)	(0.418)	(<0.001)	(<0.001)	(<0.001)	(<0.001)		
Tax und. / $Assets_{t-1}$			-0.120	-0.150	0.540	0.409	-0.289	-0.485
			(0.145)	(0.051)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052	66,052	66,052	66,052	66,052	66,052
R^2	0.030	0.029	0.057	0.058	0.126	0.126	0.164	0.157

Appendix A – Variable definitions

Appendix A defines the variables used in this analysis. Note that variable is set to zero if missing in Compustat.

Accounts payable increase	Compustat accounts payable (*ap*) in period t minus the same value in period t - 1
Assets (book unless noted)	Compustat total assets (*at*) less PVOPLS starting in 2019.
Capex	Compustat (*capx*)
Cash	Compustat cash and short-term investments (*che*)
ΔCash	$Cash_t - Cash_{t-1}$
Cash ETR	Compustat (*txpd*) / PTI, winsorized at 0 and 1
Cash taxes	Compustat (*txpd*)
Debt	Balance sheet debt (*dlc* + *dltt*) less PVOPLS starting in 2019
Debt issues	Compustat (*dltis*)
Debt repayments	Compustat (*dltr*).
ΔD_{CF}	Debt issues – Debt repayments
Dividends	Compustat (*dvc*)
Equity issues	Compustat (*sstk*)
Equity repurchases	Compustat (*prstkc*)
ΔE_{CF}	Equity issues – Equity repurchases
GAAP ETR	Compustat total income tax (*txt*) / PTI, winsorized at 0 and 1
Industry	Fama French 48 industry in the most recent available year for each firm.
Market-to-book$_t$	Market assets scaled by the book value assets. Assets + market value of common equity (*prcc_f* * *csho*) - common equity (*ceq*) / Assets.
NCF	$OCF - Capex_{t-1} - Dividends_{t-1}$.
NCF (tax adjusted)	NCF + residual from Eq. (1)
NOL benefit	Undiscounted value of NOL carryforwards following the correction in Heitzman and Lester (2021)
Available NOL benefit	max(NOL benefit, 0.23*PTI)
Excess NOL benefit	NOL benefit – Available NOL benefit
OCF	Compustat (*oancf)*
Proactive tax underpayment	An indicator variable equal to 1 if tax underpayment is in the top 10% of that year
Proactive debt issue	An indicator variable equal to 1 if $\Delta D_{CF\,t} / Assets_{t-1}$ is in the top 10% of that year
Proactive equity issue	An indicator variable equal to 1 if $\Delta E_{CF\,t} / Assets_{t-1}$ is in the top 10% of that year
Proactive trade credit increase	An indicator variable equal to 1 if accounts payable increase is in the top 10% of that year
PTI	Compustat (*pi*) – Compustat (*spi)*
PVOPLS	Present value of operating lease calculated as the present value of future minimum lease payments (*mrc1 – mrc5*) discounted using the Baa yield and assuming that payments after six years (*mrcta*) occur equally over a five-year period.
R&D	Compustat (*xrd*).
Shortfall (0,1)	An indicator variable equal to 1 if A) the beginning cash plus NCF (tax adjusted) is less than zero (immediate depletion version) or B) if NCF (tax adjusted) is less than zero (NCF deficit version)
Stock return	The total return on the firm's stock over the fiscal year
Stock volatility	σ(Return). The standard deviation of total return on the firm's stock over the fiscal year
Tax underpayment	The residual from the expected cash tax flows model in Eq. (1) multiplied by -1.
Unconstrained (0,1)	An indicator variable equal to one if debt issues, debt repayments, equity issues, or equity repurchases (each scaled by beginning assets) are in the top quartile for a given year.
UTB	Compustat unrecognized tax benefit (*txtubend*)
UTB current increase	Compustat unrecognized tax benefit increase - current tax positions (*txtubposinc*) scaled by beginning UTB (*txtubbegin*)
Z-score	3.3*pretax income (*pi*) + 1.0*Sales (*sale*) + 1.4*Retained earnings (*re*) + 1.2*Working capital (*act – lct*) / *at*.

Appendix B – Sample selection

This appendix reports the sample size and number of firm-year observations dropped to various data requirements.

Compustat sample, 1990 – 2022 (tax years)		165,675
Less: Financial and regulated firms	(42,746)	
Less: Missing annual return	(13,077)	
Less: Missing current and prior year accounting data	(8,976)	
Less: Inflation-adjusted assets < $10M and/or non-positive sales	(5,984)	(70,783)
		94,892
Non-positive PTI		(28,840)
Final sample		66,052

Appendix C – Logit regression results of models

This table reports logit regression results for the discrete choice models presented in the paper. Panel A provides the results for the models in Table 3. Panel B provides the results for the models in Table 4. Panel C provides the results for the models in Table 5. Panel D provides the results for the models in Table 6. Coefficients reported with two-tailed p-values in parentheses. All models are estimated with the same industry and year fixed effects, robust and clustered standard errors by firm as the prior models. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses.

Panel A: The sensitivity of proactive tax underpayment to cash needs, Logit

Dependent variable	Proactive tax underpayment (0,1)		
	(1)	(2)	(3)
NCF deficit (0,1)		0.267	
		(<0.001)	
Immediate depletion (0,1)			0.251
			(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.074	-0.077	0.016
	(0.495)	(0.479)	(0.882)
NCF^{TA}_t / $Assets_{t-1}$	-0.309	0.293	0.006
	(0.018)	(0.080)	(0.967)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	0.014	-0.015	-0.025
	(0.899)	(0.891)	(0.820)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	-0.065	-0.053	-0.060
	(0.408)	(0.501)	(0.446)
ΔAP_t / $Assets_{t-1}$	1.051	1.042	0.966
	(0.002)	(0.003)	(0.006)
$Ln(Assets_{t-1})$	-0.103	-0.099	-0.100
	(<0.001)	(<0.001)	(<0.001)
$Market\text{-}to\text{-}book_{t-1}$	0.150	0.148	0.146
	(<0.001)	(<0.001)	(<0.001)
$Debt_{t-1}$ / $Assets_{t-1}$	-0.627	-0.622	-0.654
	(<0.001)	(<0.001)	(<0.001)
$Dividend_t > 0$	-0.008	-0.006	-0.002
	(0.828)	(0.863)	(0.963)
$Stock\ return_t$	0.284	0.285	0.282
	(<0.001)	(<0.001)	(<0.001)
$Stock\ volatility_t$	0.786	0.751	0.790
	(<0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052
$Pseudo - R^2$	0.0385	0.0396	0.0391

Appendix C (continued)

Panel B.1: Sensitivity of tax underpayment to cash needs conditional on starting book leverage, Logit

Dependent variable (0,1)	Proactive tax underpayment (0,1)			
Industry-adjusted leverage at beginning of year	Above median	Below median	Above median	Below median
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.224	0.305		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.262	0.298
			(<0.001)	(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.222	0.083	-0.089	0.172
	(0.342)	(0.517)	(0.706)	(0.192)
NCF^{TA}_t / $Assets_{t-1}$	0.267	0.060	0.188	-0.297
	(0.259)	(0.779)	(0.407)	(0.092)
N	33,030	33,022	33,030	33,022
$Pseudo - R^2$	0.041	0.039	0.041	0.038

Panel B.2: Sensitivity of tax underpayment to cash needs conditional on starting market-to-book ratio, Logit

Dependent variable (0,1)	Proactive tax underpayment (0,1)			
Industry-adjusted market-to-book beginning of year	Below median	Above median	Below median	Above median
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.274	0.306		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.176	0.348
			(0.017)	(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.483	0.068	-0.391	0.173
	(0.011)	(0.595)	(0.044)	(0.186)
NCF^{TA}_t / $Assets_{t-1}$	0.070	0.074	-0.400	-0.138
	(0.795)	(0.706)	(0.085)	(0.422)
N	33,012	33,040	33,012	33,040
$Pseudo - R^2$	0.044	0.041	0.043	0.041

Panel C: Sensitivity of proactive tax underpayment to cash needs for unconstrained firms, Logit

Dependent variable (0,1)	Proactive tax underpayment > 0.015			
Shortfall definition	Immediate Depletion ($Cash_{t-1}$ + NCF_t (tax adj.) < 0)		NCF Deficit NCF_t (tax adj.) < 0	
Unconstrained financing activity per UNCF?	Yes	No	Yes	No
	(1)	(2)	(3)	(4)
NCF deficit (0,1)	0.188	0.401		
	(<0.001)	(<0.001)		
Immediate depletion (0,1)			0.204	0.360
			(0.001)	(0.359)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.023	-0.257	0.043	-0.094
	(0.861)	(0.147)	(0.745)	(0.605)
NCF^{TA}_t / $Assets_{t-1}$	0.311	-0.232	0.181	-0.838
	(0.107)	(0.470)	(0.309)	(0.001)
N	42,726	23,326	42,726	23,326
$Pseudo - R^2$	0.0443	0.0420	0.0442	0.0406

Appendix C (continued)

Panel D.1: Multivariate regression with main effects, Logit

Dependent variable	Proactive tax underpayment (0,1)		Proactive net debt issues (0,1)		Proactive net equity issues (0,1)		Proactive trade credit increase (0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NCF deficit (0,1)	0.267		0.440		0.218		0.858	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	
Imm. depletion (0,1)		0.251		0.665		0.477		0.372
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.077	0.016	-2.010	-1.580	0.312	0.506	-0.562	-0.353
	(0.479)	(0.882)	(<0.001)	(<0.001)	(0.006)	(<0.001)	(<0.001)	(0.016)
NCF^{TA}_t / $Assets_{t-1}$	0.293	0.006	-0.968	-0.843	-1.234	-1.083	-3.758	-5.254
	(0.080)	(0.967)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	-0.015	-0.025			0.061	0.017	2.552	2.563
	(0.891)	(0.820)			(0.617)	(0.888)	(<0.001)	(<0.001)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	-0.053	-0.060	-0.625	-0.615			0.724	0.729
	(0.501)	(0.446)	(<0.001)	(<0.001)			(<0.001)	(<0.001)
ΔAP_t / $Assets_{t-1}$	1.042	0.966	8.161	8.067	3.597	3.442		
	(0.003)	(0.006)	(<0.001)	(<0.001)	(<0.001)	(<0.001)		
Tax u. / $Assets_{t-1}$			-3.104	-3.048	2.894	2.852	-4.678	-4.390
			(<0.001)	(<0.001)	(<0.001)	(0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052	66,052	66,052	66,052	66,052	66,052
R^2	0.040	0.039	0.067	0.069	0.160	0.161	0.203	0.195

Appendix C (continued)

Panel D.2: Multivariate regression with main effects and interaction terms, Logit

Dependent variable	Proactive tax underpayment (0,1)		Proactive debt issue (0,1)		Proactive equity issue (0,1)		Proactive trade credit increase (0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NCF deficit (0,1)	0.290		0.788		0.494		0.988	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	
× $Cash_{t-1}$ / $Assets_{t-1}$	0.012		-1.370		-1.182		-0.199	
	(0.946)		(<0.001)		(<0.001)		(0.335)	
× NCF^{TA}_t / $Assets_{t-1}$	-1.336		-3.669		-1.645		-2.269	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	
× $\Delta D_{CF\,t}$ / $Assets_{t-1}$	0.025				-0.285		-0.545	
	(0.908)				(0.244)		(0.005)	
× $\Delta E_{CF\,t}$ / $Assets_{t-1}$	-0.378		0.044				-0.206	
	(0.011)		(0.864)				(0.279)	
× ΔAP_t / $Assets_{t-1}$	-0.672		-10.132		-3.715			
	(0.352)		(<0.001)		(<0.001)			
× Tax u. / $Assets_{t-1}$			-2.292		-7.714		-0.830	
			(0.200)		(<0.001)		(0.686)	
Imm. depletion (0,1)		0.249		0.822		0.599		0.594
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
× $Cash_{t-1}$ / $Assets_{t-1}$		0.990		-0.944		-1.793		1.212
		(0.124)		(0.097)		(0.002)		(0.083)
× NCF^{TA}_t / $Assets_{t-1}$		0.051		-2.273		-1.149		2.790
		(0.886)		(<0.001)		(<0.001)		(<0.001)
× $\Delta D_{CF\,t}$ / $Assets_{t-1}$		-0.051				-1.078		-0.870
		(0.830)				(<0.001)		(<0.001)
× $\Delta E_{CF\,t}$ / $Assets_{t-1}$		-0.009		-0.524				-0.021
		(0.958)		(0.020)				(0.922)
× ΔAP_t / $Assets_{t-1}$		0.646		-9.106		-2.868		
		(0.355)		(<0.001)		(<0.001)		
× Tax u. / $Assets_{t-1}$				-2.882		-6.925		3.566
				(0.162)		(0.003)		(0.132)
$Cash_{t-1}$ / $Assets_{t-1}$	-0.110	0.113	-1.707	-1.682	0.602	0.517	-0.527	-0.421
	(0.363)	(0.312)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.003)	(0.005)
NCF^{TA}_t / $Assets_{t-1}$	0.930	0.058	1.058	-0.051	-0.463	-0.854	-2.152	-6.364
	(<0.001)	(0.763)	(<0.001)	(0.818)	(0.105)	(<0.001)	(<0.001)	(<0.001)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	-0.051	-0.035			0.130	0.281	2.773	2.837
	(0.728)	(0.790)			(0.453)	(0.047)	(<0.001)	(<0.001)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.097	0.009	-0.673	-0.406			0.805	0.723
	(0.322)	(0.921)	(0.002)	(0.012)			(<0.001)	(<0.001)
ΔAP_t / $Assets_{t-1}$	1.238	0.654	15.149	12.886	5.788	4.768		
	(0.223)	(0.223)	(0.223)	(0.223)	(0.223)	(0.223)		
Tax u. / $Assets_{t-1}$			-1.609	-1.937	5.578	4.116	-4.111	-5.585
			(0.153)	(0.058)	(<0.001)	(<0.001)	(0.009)	(<0.001)
N	66,052	66,052	66,052	66,052	66,052	66,052	66,052	66,052
$Pseudo - R^2$	0.040	0.036	0.076	0.076	0.163	0.163	0.205	0.197

Appendix D – The sensitivity of proactive tax underpayment to cash needs, single model

This table reports the same regression results as Table 3, but utilizes a single cash tax prediction model instead of estimating the residual by industry. All regressions are estimated with industry and year fixed effects. Standard errors are robust and clustered by firm. Variables defined in Appendix A. Coefficients reported with two-tailed *p*-values in parentheses.

Dependent variable	Proactive tax underpayment (0,1)		
	(1)	(2)	(3)
NCF deficit (0,1)		0.023	
		(<0.001)	
Immediate depletion (0,1)			0.021
			(<0.001)
$Cash_{t-1}$ / $Assets_{t-1}$	0.003	-0.009	-0.001
	(0.773)	(0.419)	(0.938)
NCF^{TA}_t / $Assets_{t-1}$	-0.022	0.015	-0.013
	(0.132)	(0.390)	(0.429)
$\Delta D_{CF\,t}$ / $Assets_{t-1}$	0.004	-0.004	-0.005
	(0.705)	(0.686)	(0.642)
$\Delta E_{CF\,t}$ / $Assets_{t-1}$	0.030	0.008	0.007
	(0.013)	(0.501)	(0.527)
ΔAP_t / $Assets_{t-1}$	0.074	0.085	0.081
	(0.051)	(0.026)	(0.034)
$Ln(Assets_{t-1})$	-0.009	-0.008	-0.008
	(<0.001)	(<0.001)	(<0.001)
$Market\text{-}to\text{-}book_{t-1}$	0.022	0.019	0.019
	(<0.001)	(<0.001)	(<0.001)
$Debt_{t-1}$ / $Assets_{t-1}$	-0.049	-0.053	-0.055
	(<0.001)	(<0.001)	(<0.001)
$Dividend_t > 0$	0.001	0.000	0.000
	(0.794)	(0.976)	(0.923)
$Stock\ return_t$	0.036	0.035	0.035
	(<0.001)	(<0.001)	(<0.001)
$Stock\ volatility_t$	0.121	0.096	0.100
	(<0.001)	(<0.001)	(<0.001)
N	66,052	66,052	66,052
R^2	0.0313	0.0292	0.0288

Appendix E - Internal Revenue Service ("IRS") rules on interest and penalties for corporate tax underpayment

How does the IRS calculate the principal on which it charges interest?

Corporate taxpayers are required to make quarterly estimated tax payments via the Electronic Federal Tax Payment System (EFTPS) throughout the year rather than paying the entire tax liability in one lump sum when the tax return is filed. The amount of any underpayment is equal to the difference between the required quarterly payment and any amount that the firm did pay on or before the due date of the quarterly payment (I.R.C. §6655). This amount can be seen as the amount of debt the firm is "borrowing" from the IRS.

What amount of cash is required to be paid in these quarterly payments? Quarterly estimated income tax payments must equal 25% of the lesser of (1) 100% of the tax shown on this year's income tax return or (2) 100% of the tax shown on the preceding tax year's tax return. If the taxpayer did not have a tax liability (had an NOL) in the previous year, (2) will not apply.

If a taxpayer is a "large corporation" (1M or more taxable income in any of the 3 preceding tax years, disregarding NOL carrybacks and carryforwards), (2) will not apply, and the taxpayer must pay 25% of 100% of the tax shown on this year's income tax return. A large corporation is permitted to calculate its Q1 payment based on 100% of the tax shown on the preceding tax year's tax return, but if this payment is lower than 100% of the tax shown on this year's income tax return, the difference must be added to the Q2 payment.

Keep in mind that a calendar-year corporation will not file its Form 1120 income tax return until April 15th (October 15th with allowable extension), so a firm will not have certainty about number (1) above when making its quarterly cash tax payments.

A firm can use Form 1120-W to calculate the quarterly estimated tax payments it needs to make. Generally, the IRS will calculate any underpayment, interest, and penalties and bill the taxpayer. However, a corporation may use Form 2220 to calculate the underpayment penalty.

Special cases:

- A corporation can utilize the annualized income method under I.R.C. §1.6655-2 or the adjusted seasonal installment method under I.R.C. §1.6655-3. If there had not been an underpayment under one of these two alternative methods, generally, no interest or penalties would have been charged to the taxpayer.
- In 2012, 2014, 2015, 2016, 2019, and 2020, special rules were in effect for corporations with beginning assets over $1 billion. These firms were required to accelerate the cash tax payment by increasing the amount due in Q3 (any payment in July, August, or September) by 0.25% and decreasing the amount due in Q4. The purpose of these regulations was to accelerate tax revenues for the federal government (FYE September 30th) into an earlier fiscal year.
- Special rules for partnership income inclusions (Subpart F) and REITs apply

When is the firm considered to have borrowed funds?

For calendar-year corporations, the due dates for quarterly cash tax payments are as follows:

Calendar year-end	Q1 payment	Q2 payment	Q3 payment	Q4 payment
December	4/15	6/15	9/15	12/15

For fiscal year corporations, the due dates are as follows:

Fiscal end month	Q1 payment	Q2 payment	Q3 payment	Q4 payment
January	5/15	7/15	10/15	1/15
February	6/15	8/15	11/15	2/15
March	7/15	9/15	12/15	3/15
April	8/15	10/15	1/15	4/15
May	9/15	11/15	2/15	5/15
June	10/15	12/15	3/15	6/15
July	11/15	1/15	4/15	7/15
August	12/15	2/15	5/15	8/15
September	1/15	3/15	6/15	9/15
October	2/15	4/15	7/15	10/15
November	3/15	5/15	8/15	11/15

If any due date falls on a weekend or legal holiday, the next regular workday is substituted.

The period of underpayment is deemed to run from the due date for the quarterly cash tax payment to the earlier of A) the 15th day of the 4th month following the close of the tax year or B) the date on which the underpayment is made whole with a cash payment. If a taxpayer has multiple periods of underpayment, any cash payment first eradicates the earliest installment required to be paid. For example, if a firm underpaid quarterly estimated tax payments by $100 in each quarter Q1-Q3 and then made a cash payment of $150, the underpayment in Q1 would be made whole, and the underpayment in Q2 would be reduced to $50 while the underpayment in Q3 would remain at $100.

The IRS will automatically send a Notice of Deficiency (NoD) if quarterly taxes have been underpaid. Per the IRS website, underpayment of estimated tax by corporations' penalties is due on the date the IRS sends a Notice of Deficiency. If a taxpayer receives a notice, they are not charged interest from the date of the letter to the date of payment if they pay the amount of the penalty in full by the "pay by" date on the notice – 21 days. This grace period exists so that the taxpayer does not need to guess what day the IRS will receive the payment and attempt to pay interest through that date. In the case of "hot interest," the grace period is reduced to 10 days.

The statute of limitations for the interest is generally 10 years from the date of assessment of the underlying tax. It is separate from the SOL on the underlying tax liability.

Special cases:

- As a result of the COVID-19 pandemic, Q1 2020 payments were granted an extension and due July 15th 2020.

What does the IRS charge taxpayers who borrow?

If a firm fails to make sufficient quarterly cash payments, the IRS charges interest on the underpayment. The interest rates are determined quarterly and released by the IRS through Revenue Rulings. The rate is set at the federal short-term rate (based on daily compounding, rounded to the nearest whole percent) rate plus 3 percentage points and was 8% as of Aug 2023 per I.R.B. 2023-49 and Revenue Ruling 2023-22. Per I.R.C. § 6622, daily compounding does not apply to quarterly estimated tax payments even though the rate is based on a daily compounding rate.

For large corporate underpayments – defined as an underpayment of over $100,000 in a single taxable period by a C Corporation – the interest rate is the federal short-term rate plus 5 percentage points. This higher interest rate is known as "hot interest." The higher rate will apply if the corporation fails to pay the underpayment within 30 days after receiving the Notice of Deficiency from the IRS. Once the hot interest threshold is crossed, the higher interest rate applies to all underpayments until the deficiency is satisfied.

No additions (interest or penalties) are made if the tax owed is less than $500 (I.R.C. §6655-1).

Additional penalties are imposed for failure to file a tax return, underpayment due to willful neglect, failure to pay any amount, or fraud (I.R.C. §6651). Failure to file the return results in an addition of 5% of the tax amount, with 5% being added each month up to a maximum of 25%. Failure to pay the whole amount or any amount – unless the failure is due to reasonable cause and not due to willful neglect – results in a penalty of 0.5% of the tax amount for the first month with an additional 0.5% of the tax amount for each additional month the tax is unpaid up to a maximum of 25%. The penalty is figured separately for each quarterly tax payment due date. If the taxpayer fails to both file and pay, the sum of the penalties may not exceed 5% per month. If the failure to file a return is found to be fraudulent, 5% is replaced with 15%, and 25% becomes 75%. The penalties begin to accumulate from the date the tax was originally due to be paid. The penalty period ends when the IRS receives the total amount due. The firm is charged interest on the unpaid penalties.

Whether interest paid on a tax deficiency is tax deductible is somewhat of an open question. I.R.C. §163 and §162(f) provide that interest on tax deficiencies (unless related to an undisclosed listed or reportable avoidance transaction) is generally deductible by corporate taxpayers. Federal income taxes and any related interest are not tax deductible (I.R.C. §275(a)). Penalties and interest payments related to penalties are also not tax deductible under I.R.C. §1.162-21. Generally, an individual is not allowed to deduct this interest, but a corporation is entitled to deduct interest paid on a tax deficiency.

Discount on borrowing costs: natural disasters

Individual and business taxpayers located in a federally declared disaster area (or those whose records necessary for filing taxes are located in a federally declared disaster area) are typically given an extension on filing tax returns and making estimated tax payments. The deferrals on cash tax payments are interest-free. IRS guidance on disaster relief is reported at https://www.irs.gov/newsroom/tax-relief-in-disaster-situations.

Following the disaster declaration issued by the Federal Emergency Management Agency for California counties impacted by severe winter storms and flooding in early January 2023, the IRS extended the deadline to file tax returns and make tax payments for affected taxpayers.[18] The IRS set an original deadline of October 16, 2023, to file tax returns and make any outstanding tax payments deferred as a result of the disaster declaration. On October 16, 2023, the IRS extended the deadline to November 16, 2023. In the paper, we examine this specific event and its impact on cash tax payments by California corporations.

[18] https://www.irs.gov/newsroom/irs-announces-tax-relief-for-victims-of-severe-winter-storms-flooding-and-mudslides-in-california