Reconciling competing reporting objectives through deferred tax accounts: evidence on Italian private firms

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This paper contributes to the growing literature on earnings management in private firms by focusing on deferred taxes. This accounting treatment requires sophisticated use of accruals that provides the chance to manage earnings and net assets without affecting the tax payable. We argue that in a setting with high book-tax conformity, the small room that allegedly exists to recognise deferred taxes remains a comfortable avenue to reach reporting objectives that a tax-minimisation strategy may preclude. We use a sample of private firms operating in a credit- and tax-driven environment such as Italy to test this expectation. Our results show that private firms use deferred taxes to extract multiple financial reporting benefits that may facilitate debt contracting: smoothing earnings over time, meeting/beating historical earnings, avoiding reporting accounting losses, and managing leverage. Tax loss carryforwards are the source of deferred tax assets where the exercise of discretion becomes more critical.

Keywords: private firms; deferred taxes; earnings smoothing; book-tax conformity; tax loss carryforwards

JEL: M400; M410; M480

1 Introduction

This study investigates whether privately held companies opportunistically recognise deferred taxes to manage earnings in Italy, a European country with high alignment between accounting and taxation. Here, tax minimisation and credit financing are likely to play an influential and potentially diverging role in shaping financial reporting.

The recognition of deferred taxes reconciles the temporary differences between accounting earnings and taxable income. The deferred tax expense provides a bridge to transform the current tax expense into accrual tax expense to comply with the matching principle. The current tax expense is based on taxable income and is an estimate of what is due during the period; the accrual tax expense is an estimate of tax incurred on the accounting earnings in the same period (either due for the period, to be paid in the future, or paid in the past) (Hanlon & Heitzman, 2010).

The earnings management literature overlooks the role of deferred taxes in private firms, as it is focussed mainly on publicly held firms in the United States (see Graham et al., 2012) and Australia, highlighting that firms manage tax accounts to meet or beat analysts' forecasts (Frank & Rego, 2006; Herbon et al., 2010). Manipulation of financial indicators and earnings smoothing appear limited to the banking industry both in the United States (Schrand & Wong, 2003) and Japan (Skinner, 2008), where banks manage deferred tax assets to adjust the level of regulatory capital. Gordon and Joos (2004) find that United Kingdom firms use the tax accounts to manage the debt-to-equity ratio but not earnings when SSAP 15 required the partial method for accounting for deferred taxes, in contrast with the result of Holland and Jackson (2004). Yet, generalising these findings is an issue (Graham et al., 2012) as they are mixed and limited to public companies. Thus, a deeper understanding of institutional details appears fundamental to reconciling data and results across studies (Hanlon & Heitzman, 2010; Leuz, 2010).

The central argument of this study is that in a private firm setting where there is a high alignment between financial reporting and tax accounting, the room to exercise discretion over deferred taxes does not disappear and may represent an opportunity to offset the financial reporting costs of a tax minimisation strategy. These are the nontax costs, real or perceived, of lowering reported earnings and shareholders' equity (Shackelford & Shelvin, 2001) due to financial accounting choices that are directly tailored to minimise taxable income (Coppens & Peek, 2005).

At first glance, our reasoning seems counterintuitive. A commonsensical expectation from a high alignment between accounting and taxation is that few temporary book-tax differences arise, thus limiting the need to recognise deferred taxes. We claim that this expectation may be a rational motive for private firms' stakeholders to overlook the deferred tax accounts. Yet, determinants of deferred taxes do exist in high-alignment countries, and private firms may find it easy to exploit the room to finalise the deferred tax accounts without alarming their main stakeholders. Prior research in these settings indicates that the role investors, financial analysts, or regulating authorities of the stock exchange typically play for public firms is taken on by the tax authorities as direct users of private firms' financial statements. Tax authorities use financial statements as the basis to verify the congruity of the tax burden (Szczesny & Valentincic, 2013; Van Tendeloo & Vanstraelen, 2008). In these countries, the aim of constraining aggressive tax accounting practices also increases auditors' attention, as they must assess the fairness of financial statements (Van Tendeloo & Vanstraelen, 2008). Thus, it is questionable whether tax authorities or auditors deeply scrutinise accounting items that do not impact the present value of the tax payable, as in the case of deferred taxes. However, motives other than minimising the tax payable shape private firms' financial reporting (Ball & Shivakumar, 2005; Kosi & Valentincic, 2013).

Szczesny and Valentincic (2013) find that creating reserves for future compliance with financial institutions is a plausible objective of the write-offs of German private firms. Mafrolla and D'Amico (2017) document that private Italian, Spanish, and Portuguese firms successfully manage earnings to achieve better borrowing capacity. Contrary to the expectation that a high level of book-tax conformity reduces the incentive for income-increasing accounting choices, Coppens and Peek (2005) find that Belgian and Italian private firms do avoid accounting losses and earnings decreases. They interpret the high frequency of small annual changes in profit as indicative of earnings smoothing. More widely, Gassen and Fülbier (2015) show that European private firms report smoother earnings when larger shares of creditor financing are present. All in all, the theory that firms weigh the tax incentives (i.e., to lower taxable income in order to minimise the tax payable) against the financial reporting incentive (i.e., to smooth or increase accounting earnings and facilitate debt contracting; Scholes & Wolfson, 1992) appears relevant to understanding the financial reporting practice in European private firms. In effect, private credit is a central source of financing for European private firms, including trade credit, which is often overlooked in the accounting literature of private firms (Burkart & Ellingsen, 2004; Cascino et al., 2014; Gassen & Fülbier, 2015; Hope & Vyas, 2017; McGuinness et al., 2018).

This analysis focuses on Italy. As in most countries, private firms represent the backbone of the entrepreneurial system (Hope & Vyas, 2017; Nagar et al., 2011). Very few public companies are listed on the Milan Stock Exchange and must comply with the IAS/IFRS accounting model (Mura & Roberto, 2014). The immense world of private firms complies with local GAAP and heavily relies on bank and trade credit. Facilitating credit financing is thus a sound incentive that may influence the financial reporting practice of private firms (Mafrolla & D'Amico, 2017). Moreover, in line with the accounting tradition of most continental European countries, Italian GAAP is closely related to tax rules (Gavana et

al., 2013). High corporate taxation incentivises Italian private firms to minimise taxable income and, ultimately, the tax burden (Mura et al., 2013). Overall, these features represent an interesting setting to investigate whether high book-tax conformity deters private firms from exercising discretion over the deferred tax accounts in order to convert the undesired earnings before deferred taxes into convenient earnings after taxes that can meet creditors' expectations (Tang, 2015).

We undertake an eight-year analysis (2006–2013) on a sample of around 11,000 private Italian firms. We first investigate the distributions of net earnings and earnings before deferred taxes and find that the deferred tax expense is responsible for a substantial shift of observations across the 'red line' from a small loss to a small profit. Then we focus on the recognition of deferred tax assets, which is the most judgmental aspect of accounting choice. Using a single-stage approach, we regress the change in deferred tax assets on proxies for operational and discretionary factors that identify different financial reporting objectives. Overall, we collect evidence supporting the prediction that private firms use the tax accounts to smooth earnings, meet or beat historical earnings, avoid losses and earnings decreases, and manage leverage, especially when private credit is high. Our additional tests indicate that unused tax losses are the source of deferred tax assets, where the exercise of discretion becomes more critical. The 2011 regulatory change introducing no time limit to carry forward tax losses appears to increase such discretion. However, we fail to find evidence of auditors' ability to moderate this discretion, regardless of the level of audit quality. Finally, when we focus on subsamples of suspect firms that successfully meet/beat prior or zero earnings, we realise that the economic significance of discretionary factors that proxy these reporting targets increases. In contrast, that of the operational factors decreases. In comparison with the rest of the sample, suspect firms register significantly higher leverage and effective tax rates:

these are the conditions under which the reporting incentives from credit financing and tax minimisation collide.

Our study contributes to the extant literature in the following respects. First, we supplement the deferred tax literature by adding empirical evidence on private firms, a world still underexplored in this respect. The impact of credit- and tax-driven incentives on private firms' accounting choice is investigated through the deferred tax accounts, which are thus added to the list of specific accrual approaches that analyse private firms' reporting practice within Europe (Gaeremynck & Veugelers, 1999; Garrod et al., 2008; Kosi & Valentincic, 2013; Szczesny & Valentincic, 2013). We contribute to the private firm literature investigating the association of earnings management with private credit (Bigus & Häfele, 2016; Gassen & Fülbier, 2015; Mafrolla & D'Amico, 2017). We show how firms devote their discretion over the recognition of deferred tax assets to reaching prior and/or zero earnings, especially when they are highly leveraged. We also complement the literature on auditing among private firms (Bianchi, 2018; Vanstraelen & Schelleman, 2017; Van Tendeloo & Vanstraelen, 2008), showing that the discretionary use of deferred taxes is unaffected by the level of audit quality. This finding aligns with our argument that auditors are less likely to focus on items that do not impact the present value of the tax payable. The tax focus, which appears to dominate external controls, has damaging implications for the enforcement of financial reporting standards and the quality of earnings. From a standard setter's perspective, the high discretion we have documented questions the ability of the Italian financial reporting rules on income taxes, which mirror IAS 12, to ensure fairness in financial statements (Flagmeier, 2022), especially when tax loss carryforwards are involved.

The remainder of the paper contains five sections. Section 2 explains the relationship between financial and tax reporting in Italy and the accounting standard for deferred taxes. Section 3 reports background information on financial accounting reporting incentives in

private firms and develops the theoretical hypotheses to be tested. The research design is explained in section 4. The results of empirical tests are given in section 5, and a final section discusses the implications of the findings.

2 Book-tax conformity and recognition of deferred taxes in Italy

2.1 The relation between accounting earnings and taxable income in Italy

In Italy, as in almost every country, accounting earnings are the natural starting point for the computation of taxable income (Nobes, 2003). The divergence between the two measures depends on a wide variety of factors (Hanlon & Heitzman, 2010), including the different purposes that regulators and firms assign to financial reporting and fiscal policies (Nobes, 2003). Gavana et al.'s (2013) analysis of the relationship between taxation and financial reporting in Italy highlights a strong reciprocal influence with numerous arenas, where accounting values are determined with tax motivations in mind, or by directly applying tax rules. Indeed, Italy is traditionally grouped amongst high-alignment European countries, together with Belgium, Germany, France, and Spain (Coppens & Peek, 2005; Oliveras & Puig, 2005). Yet the relationship between accounting and taxation fluctuates over time and is not precise, as demonstrated by the decreasing alignment exhibited by Germany, Spain, and Norway (Atwood et al., 2010; Nobes & Schwencke, 2006; Oliveras & Puig, 2005).

Gavana et al.'s (2013) qualitative analysis over the period of our study registers an increasing link between tax rules and local Italian GAAP. High book-tax conformity notwithstanding, several cases remain where different purposes underlying accounting and tax rules justify disconnection (Gavana et al., 2013). These cases generate book-tax differences, because the level of disconnection inhibits private firms from directly applying tax rules, as they would either break the civil law or compromise the tax incentive. Indeed, more than forty lines in the Italian income tax return represent the usual space that fiscal regulators devote to

tax adjustments applied to accounting earnings to arrive at taxable income. Many of these cases represent temporary differences: determinants that may give rise to deferred taxes in Italy.

2.2 Recognition of deferred taxes

The Civil Code and the accounting standard Organismo Italiano di Contabilità (OIC) 25 prescribe the treatment for deferred taxes in Italy. OIC 25 was issued in 1999, first revised in 2005 to conform with the 2003 Civil Code reform, and more recently updated in 2014 and 2016. In line with the international convergence of accounting standards and the EU harmonisation process, the Civil Code changes and the evolution of OIC 25 substantially reflect the main features of IAS 12, including the worldwide trend towards the liability method. The 2005 version of OIC 25 applies to the period analysed in this paper.

OIC 25 requires the recognition of deferred tax liabilities for taxable temporary differences and the recognition of deferred tax assets for deductible temporary differences and tax loss carryforwards. Similar to IAS 12, OIC 25 introduces discretion over deferred tax assets. Their recognition is conditional on the 'reasonable certainty' that the firm will realise sufficient taxable income against which to use the temporary differences and/or tax loss carryforwards. This prescription slightly differs from IAS 12. Instead of reasonably certain, IAS 12 requires that it must be 'probable' that taxable income will be available in the future. In this respect, the wording of OIC 25 appears even more prudent.

As regards temporary deductible differences that can give rise to deferred tax assets, the following are typical examples (see also Gavana et al., 2013): management fees expensed on an accrual basis but deductible on a cash basis; bad debt provisions that exceed the fiscal limit of 0.5% of trade receivables; repair and maintenance expenses for property, plant, and equipment that exceed the fiscal limit of 5% of the assets' historical costs and are tax-deductible in the following five years; amortisation of purchased goodwill and brands that are

accrued for accounting purpose over a shorter period than the minimum period of 18 years required for tax purposes; unrealised losses on foreign trade that are accrued for accounting purposes but are deductible only when paid; and interest expenses that exceed interest income and the fiscal limit of 30% of gross operating profit and are deductible in the following five years. These temporary differences share a common feature: they originate from expenses recognised in the income statement prior to taxable income. The deferred tax assets associated with these differences fall into the 'financial statements (FS) first deferred tax assets' category. This is a separate category of deferred taxes that Flagmeier (2022) identifies for research purposes, building on Laux (2013), to take into account the discretion in their recognition, as it can reveal management's private information and/or be used opportunistically.

Tax loss carryforwards represent another typical circumstance that may generate deferred tax assets. Specifically, according to the Italian Tax Code (art. 84, c. 1, D.p.r 917/86), tax losses that had incurred until 2010 could be used against available taxable income for the next five years; those incurred after 2010 can be used without temporal limitations but cannot exceed 80% of taxable income available each financial year. OIC 25 also allows firms to recognise deferred tax assets and offset them against deferred tax liabilities if the underlying temporary differences are expected to reverse—or the tax losses be used—in the same period. In this respect, the Finance Act of 2008 reduced the sources of deferred tax liabilities by the repeal of accelerated depreciation and the abolition of extra-accounting tax adjustments: a reconciliation prospect that allowed certain expenses to be considered tax-deductible before they were debited to the income statement. Still using Flagmeier's (2022) distinction, this regulatory change trimmed the category of 'tax first' deferred tax liabilities, increasing book-tax conformity in Italy. Central to the application of the standard is assessing, with reasonable certainty, the availability of future taxable income and taxable temporary differences that are

sufficient to absorb tax loss carryforwards and the reversal of temporary deductible differences.

Firms must document this reasonable certainty with supporting objective elements, such as a reliable business plan (OIC 25, par. H.1, footnote 24). Furthermore, the amount of recognised deferred tax assets must be revised every year to verify whether the reasonable certainty about future profitability still holds. At the same time, if the condition of reasonable certainty is not met at the time a given temporary difference arises or a fiscal loss occurs, firms must postpone the recognition of deferred tax assets to a later reporting period when this condition is met (OIC 25, par. H.1). In the notes to the accounts (Nota Integrativa), the Civil Code (art. 2427, n. 14) requires firms to disclose: (1) a description of temporary differences that give rise to changes in deferred tax assets and liabilities, the tax rate adopted, the items excluded from the computation, and the relating motivations; and (2) the amount of recognised deferred tax assets relating to tax losses from current and prior years, the amount not yet recognised, and the motivations for not recognising it. This approach is similar to IAS 12, where the unused temporary deductible differences and tax losses are disclosed in the notes instead of being recognised in the accounts as a contra-asset under US GAAP (ASC 740).

We hand-collected and scrutinised the notes of a simple, randomly selected sample of 100 firms from our database to gain insight into the disclosure of deferred taxes. Almost 50% of unrecognised deferred tax asset observations are from unused tax losses, while their amount is about 75% of the total value of unrecognised deferred tax assets. This confirms the importance of tax loss carryforwards as determinants of deferred tax assets in this setting. We also documented that disclosure is not consistent from firm to firm. In some instances, the unrecognised deferred tax asset amount and/or the related motivations are missing. In some others, the information in the notes is not consistent with that in the accounts. The amount of

unrecognised deferred tax assets from tax losses is often not explicitly disclosed, though it can be computed by applying the tax rate to the difference between total and used tax losses—a practice that further diminishes the visibility of this account.

Finally, Italian fiscal rules prescribe special tax regimes (called '*consolidato fiscale*' and '*consolidato mondiale'*) that treat groups of firms as a single entity for tax purposes, and firms have the option to be taxed as pass-through entities (art. 117-142 of the Italian Income Tax Code). Their different implications do not impact our study, as our focus is limited to separate independent private firms. All firms belonging to groups are excluded.

3 Hypothesis development

When releasing financial statements, private firms do not have analyst forecasts to meet, no share price reactions to worry about, or share price-based compensation schemes to support. Conversely, in a setting with a high level of corporate taxation and large use of private credit financing, such as Italy, private firms may want to target a low taxable income for tax purposes and a smooth earnings stream to accommodate creditors' expectations. The recognition of deferred taxes is one technical solution to get the best of both worlds. In effect, deferred taxes are the last item to be finalised before the release of financial statements (Dhaliwal et al., 2004), when managers have already dealt with the objective of tax minimisation. Private firms can thus enjoy the discretion to finalise deferred taxes as a buffer to accommodate the expectations of other stakeholders, like trade and finance creditors. Scholes and Wolfson's theoretical framework (1992) predicts that the feasibility of this strategy strictly depends on the balance between the related tax costs and nontax costs. We claim that the nontax costs of reporting a low tax-conforming accounting income are not trivial in high-tax-alignment countries.

The role of financial accounting information is likely to increase with the size of private firms, raising information asymmetry and agency issues (Szczesny & Valentincic,

2013). The importance of accounting numbers to external capital providers is further amplified by the poorness of alternative nonaccounting information sources (Hope et al., 2017). As private firms increase the number of bank relationships, the role of financial reporting increases in importance relative to that of informed lending because the individual bank's incentive to keep the information rent from private information decreases (Bigus & Hillebrand, 2017). Gassen and Fülbier (2015) posit that smooth earnings are especially suitable as a contractible signal on which firms and creditors can coordinate and enforce contracts. The appearance of a smoothly increasing earnings series—whose presence has been largely documented in this as in other institutional contexts (Bigus & Häfele, 2016; Burgstahler & Dichev, 1997; Coppens & Peek, 2005; Mura & Ecca, 2022; Mura & Roberto, 2020; Prencipe et al., 2011)—seems particularly reassuring for lenders. In good times, earnings smoothing prevents the payout of excessive dividends (Leuz, 1998), and in bad times, it lowers the costs of credit renegotiations or even bankruptcy (Trueman & Titman, 1988). Hence, we expect that private firms use their discretion over the recognition of deferred taxes to smooth earnings over time.

A slightly more (less) optimistic view of the firm's prospects may credibly justify not only the decision to (not) recognise the deferred tax assets for tax loss carryforwards and/or temporary deductible differences arising in the year or unrecognised in prior years, but also the decision to keep intact (lower or zero out) the pre-existing balance of deferred tax assets. Net earnings will increase (decrease) accordingly. In the presence of a tax loss, this possibility shows even in the extreme case where a firm systematically adopts tax rules for financial reporting purposes. In effect, that tax loss may diverge from the same year's accounting loss as far as the firm credits the deferred tax expense. More precisely, when earnings are temporarily declining, private firms are expected to increase the recognition of deferred tax assets. Without analysts forecasting earnings targets, private firms will aim at beating or

meeting historical earnings. When earnings are temporarily growing, firms are expected to decrease deferred tax assets to create a 'cookie jar' that can be reversed in future periods.

We thus postulate the following first hypothesis:

H_1: Within private firms, the recognition of deferred tax assets is associated with meeting/beating historical earnings.

In a similar vein, when premanaged earnings are expected to fall below zero, *ceteris paribus*, we predict that private firms use their discretion to finalise deferred taxes to avoid reporting an accounting loss or at least to reduce its amount. Moreover, when premanaged profits are large, private firms will postpone the recognition of deferred tax assets to lower earnings and preserve future profitability. In contrast, increasing the magnitude of a 'big bath' is not a plausible target under these circumstances (Christensen et al., 2008). This behaviour is not appealing to private firms, as it is consistent with capital market pressure providing financial reporting incentives to maximise accounting losses for sufficiently bad news to report higher future earnings (Mills & Newberry, 2001).

In sum, we formulate the following second hypothesis:

H_2: Within private firms, the recognition of deferred tax assets is associated with small annual profits.

Deferred tax assets also impact the denominator of leverage indicators commonly monitored by lenders to address their policy. To preserve or improve credit financing terms, private firms have the incentive to manage leverage indicators to show a stable financial condition to lenders. In bad times, firms can use their discretion to finalise the deferred tax assets to mask their weakening financial positions and avoid alarming lenders and trade creditors.

We thus postulate our third hypothesis:

H_3: Within private firms, the recognition of deferred tax assets is associated with stable financial leverage indicators.

Finally, we predict that high-leverage firms are likely to put even more effort into contrasting earnings decreases than low-leverage firms, because they have more incentive to report stable earnings to reassure lenders of their performance (Miller & Skinner, 1998). For the same reason, it is unlikely that high-leverage firms will use their discretion over deferred taxes to engage, more than low-leverage firms, in income-decreasing earnings management in the presence of earnings increases or high profit. In sum, we formulate the following fourth hypothesis:

H_4: Private firms with a larger share of credit financing show a stronger association between the recognition of deferred tax assets and offsetting earnings decreases than firms with a smaller share of credit financing.

4 Research design

4.1 The sampling process

The sample of private companies was drawn from the database AIDA, managed by Bureau Van Dijk, which contains detailed financial accounting and ownership data on companies located in Italy. As earnings smoothing is inherently a time-series phenomenon, the sampling process spans from 2006 to 2013 to guarantee the most extended period under the same accounting rules (the 2005 version of OIC 25 was later reformed in 2014).

The final sample is the result of the application of various selection criteria. First, due to their specific business policies and strategies, the sample excludes financial, insurance, and real estate firms and firms with activities related to the public sector. Second, all firms in the sample comply with local Italian GAAP (Civil Code and OIC), and their accounting data are

from separate firm-level financial statements. Third, we removed firms that can file an abridged version of financial accounts (those not exceeding for two consecutive years and two of the three following limits: €4,400,000 of total assets; €8,800,000 of revenues; and 50 employees). This is because, amongst other simplifications, these firms did not have to separately report deferred tax assets and liabilities in the balance sheet, thus preventing us from observing two relevant items of this analysis. Excluding these micro and small firms also allows us to get a sample representing the intermediate sector of audited private firms, where agency costs and information asymmetry are more likely to become an issue. Fourth, to ensure that firms included in the consolidated financial statements of another entity will not impact our analysis—as the incentives of their parent company might influence their financial reporting policies—the final sample comprises only independent, separate legal entities. This also neutralises the potentially different incentives of firms in a tax group opting for group taxation (*consolidato fiscale* and *consolidato mondiale*). Fifth, we excluded firms with public debt to analyse purely private firms. Overall, we generated a sample of the medium-sized private Italian sector mirroring the institutional settings employed in Kosi and Valentincic (2013) and Szczesny and Valentincic (2013). The final sample of this panel data includes 11,196 unique firms and 40,058 firm-year observations from 2006 to 2013.

4.2 Alternative tests for earnings management through deferred tax accounts

The peculiarities of our setting and the variety of models adopted in the deferred tax literature render it difficult to be entirely consistent with prior studies. To cope with this issue and to increase the accuracy of our research design, we adopted a twofold strategy. First, we provide evidence on whether private Italian firms do effectively exercise discretion over the recognition of deferred taxes by investigating the attributes and irregularities in the distribution of both net earnings and earnings before deferred taxes (Burgstahler & Dichev, 1997; Degeorge et al., 1999). This is what Beaver et al. (2007) suggest, as prior studies

examining whether firms exercise discretion over income taxes fail to consider the expected asymmetric effect of income taxes on the earnings distribution (e.g., Frank & Rego, 2006; Phillips et al., 2003).

Second, to replicate various existing studies, we provide different specifications for our regression model, identifying alternative proxies for the discretion that firms can exercise over the recognition of deferred tax assets. Due to data constraints, we could not use the unrecognised portion of deferred tax assets as the dependent variable of our model. Thus, we adopt a one-stage approach (as recommended by Chen et al., 2018) to evaluate how discretionary factors and operational factors relate to changes in recognised deferred tax assets (DTA) by estimating regressions of the following general model (Δ is the change operator):

$$\Delta DTA_t = \alpha + \sum_p \beta_p DISCRETIONARY_{pt} + \sum_q \beta_q OPERATIONAL_{qt} + \sum_r \beta_r CONTROL_{rt} + \varepsilon_{1t,} \quad (1)$$

where *ΔDTA* is the change in the balance of recognised deferred tax assets. We consider *ΔDTA* as a positive amount if there is an annual increase in the balance of deferred tax assets and as a negative amount otherwise; *DISCRETIONARY* relates to determinants of the change in DTA that proxy the exercise of discretion to reach financial reporting targets; *OPERATIONAL* relates to operational sources of the change in DTA; *CONTROL* relates to other control variables; and ε_{1t} refers to the error term. To alleviate scale issues, we use total assets at the beginning of the year as the scaling factor of the change in DTA and all accounting variables adopted in the model. We infer the exercise of discretion over the recognition of deferred tax assets if discretionary variables are significant (as in Frank & Rego, 2006; Gordon & Joos, 2004; Herbon et al., 2010; Miller & Skinner, 1998; Schrand & Wong, 2003).

4.3 Discretionary variables

We base the identification of this set of variables on current-year earnings before deferred taxes (EBD) as a proxy for current-year premanaged earnings. As in Frank and Rego (2006), we identified three measures of the amount by which EBD miss two alternative targets: historical earnings (HE) and zero/positive earnings (ZE). For each target, we include three indicator variables showing whether EBD are: (1) below (<) the target by a small amount, (2) below the target by a large amount, or (3) above (>) the target by a large amount. We express the amount as a percentage of total assets. As in Frank and Rego (2006), we use an interval of 5% of total assets to establish whether the premanaged deviation (P) from the target is small (S) or large (L). The six indicator variables are operationalised as follows:

$$\Delta DTA_t = \alpha + \boldsymbol{\beta_1 P{<}HE\_S_{i,t} + \beta_2 P{<}HE\_L_{i,t} + \beta_3 P{>}HE\_L_{i,t} + \beta_4 P{<}ZE\_S_{i,t} + \beta_5 P{<}ZE\_L_{i,t} + \beta_6 P{>}ZE\_L_{i,t}} + \beta_7 \Delta LEV_{i,t} + \sum_q \beta_q \Delta OPERATIONAL_{pt} + \sum_r \beta_r CONTROL_{rt} + \varepsilon_{1t} \quad (1a)$$

The first three variables (*P<HE_S*; *P<HE_L*; *P>HE_L*) test the validity of our first hypothesis predicting that private firms use their discretion to finalise deferred tax assets to reach historical earnings. The other three indicator variables (*P<ZE_S*; *P<ZE_L*; *P>ZE_L*) test our second hypothesis predicting the use of discretion over the recognition of deferred tax assets to reach zero/positive earnings (see the discussion in section 3). The premanaged deviation from historical earnings is calculated as the difference between current-year EBD and prior-year net earnings (HE); the premanaged deviation from zero/positive earnings (ZE) is calculated as the difference between current-year EBD and zero. These indicator variables equal 1 if the premanaged measure falls, respectively, below the target by a small amount (*P<HE_S; P<ZE_S*), below the target by a large amount (*P<HE_L; P<ZE_L*), and above the target by a large amount (*P>HE_L; P>ZE_L)*, 0 otherwise. In line with our first hypothesis, we predict a significantly positive sign on β_1 and β_2, as we expect private firms to report an increase in DTA to offset the premanaged negative deviation from historical earnings,

whether small or large. We do not expect private firms to exercise discretion over deferred tax assets to increase a negative deviation from historical earnings, as the big bath hypothesis predicts. At the same time, we predict a negative sign on β_3, as we expect private firms to report a decrease in DTA to counterbalance a positive deviation from historical earnings, in line with income-decreasing earnings management to build a cookie-jar reserve. Similarly, we predict a significantly positive sign on β_4 and β_5, as we expect private firms to report a positive discretionary change in DTA to avoid reporting an accounting loss (or to reduce its amount), whether small or large. Again, we exclude any income-decreasing earnings management to take a big bath. We predict a negative sign on β_6, as we expect private firms to report a decrease in DTA to reduce large profits.

Finally, ΔLEV is a continuous variable that enters the model to test our third hypothesis predicting that private firms use discretion over deferred tax assets to get stable financial indicators (Gordon & Joos, 2004; Schrand & Wong, 2003). Therefore, we expect a positive sign on β_7, which indicates a positive association between changes in DTA and changes in the firm's leverage indicator.

4.4 Operational and control variables

This set of covariates is identified according to the previous discussion of book-tax differences that can give rise to deferred tax assets in Italy (see also Gavana et al., 2013). They are operationalised as follows:

$$\Delta DTA_t = \alpha + \sum_p \beta_p DISCRETIONARY_{pt} + \boldsymbol{\beta_8 \Delta TLCF_{i,t} + \beta_9 \Delta FSFIRST_{i,t} + \beta_{10} \Delta DTL_{i,t} + \beta_{11} \Delta HEBT_{i,t-2} + \beta_{12} \Delta EBT_{i,t+1}} + \sum_r \beta_r CONTROL_{rt} + \varepsilon_{1t} \quad (1b)$$

$\Delta TLCF$ is the change in tax loss carryforwards (TLCF). According to the extant literature, this is a fundamental source of deferred tax assets (Flagmeier, 2022; Gordon & Joos, 2004; Herbon et al., 2010; Miller & Skinner, 1998). Therefore, we approximated the

amount of TLCF by adapting the algorithm elaborated by Max et al. (2023). The details are explained in Appendix 2.

ΔFSFIRST is the sum of changes in service costs (SERV, including management fees and repair and maintenance expenses), amortisation of intangible assets (AM_INT), contingencies and provisions (OTHER_PROV), bad debt provisions (BAD_DEBT), and interest expenses (INT). These are proxies for sources of temporary deductible differences in Italy (see section 2.2). They all relate to expenses that first affect financial statements and then taxable income. We expect a positive association between change in DTA and change in both TLCF and FSFIRST.

To estimate whether firms assess with reasonable certainty the future realisability of recognised deferred tax assets, we use: (1) the change in deferred tax liability (*ΔDTL*), which indicates the availability of future taxable differences against which to use deductible differences and TLCF; (2) the change in historical earnings (*ΔHEBT*) as the difference between earnings before taxes in year $t - 1$ and year $t - 2$; and (3) the future change between earnings before taxes in year $t + 1$ and year t (*ΔEBT*) (as in Frank & Rego, 2006; Schrand & Wong, 2003). *ΔHEBT* and *ΔEBT* are proxies for assessing future profitability. Accordingly, we expect a positive sign on β_{10}, β_{11}, and β_{12}, indicating that firms are consistent with OIC 25 when predicting the future realisability of deferred tax assets.

Finally, the regression model includes the following control variables: prior tax avoidance, firm size, governance, sector, and time. Prior tax avoidance is computed using the cash effective tax rate ($CETR_{3\ years}$), which is the average ratio of current tax expense to earnings before taxes over the last three years, multiplied by −1, as in Chircop et al. (2023). This controls for the influence of prior tax avoidance on *ΔDTA*, as McGuire et al. (2016) demonstrate that prior higher levels of tax avoidance (lower taxes paid) signal a higher ability to generate future taxable income. Size (*SIZE*) is the natural logarithm of sales. The number of

shareholders is used as a proxy for complexity in ownership structures (*GOV*), as in Kosi and Valentincic (2013). A vector of sector dummies (*SECTOR*) according to the capital letters of ATECO codes controls for their influence on firms' reporting behaviour. *YEAR* is a vector of time dummies that controls for the influence of the business cycle. All firms in our sample are audited. Unfortunately, we cannot further control for the quality of auditing within our fixed effects regression model because Bureau van Dijk's database provides only static data points for large auditing firms (Big 4). Keeping in mind this limitation—as this information might change over time (Beuselinck et al., 2023)—we exploit this time-invariant variable to create interaction terms in the additional tests section.

5 Results

5.1 Descriptive statistics

Table 1 reports descriptive statistics for the set of variables employed in our tests together with the variables deferred tax assets (*DTA*), deferred tax liabilities (*DTL*), and the ratios of debts to assets (*LEV*), bank credit to assets (*BANK*), and trade credit to assets (*TRADE*). All accounting variables are scaled by total assets at the beginning of the year and winsorised at the 1% and 99% percentiles to remove the influence of extreme values (Tokey, 1962). The mean (median) value of recognised deferred tax assets (DTA), which is 0.009 (0.004), is similar to the values of DTA in the United Kingdome sample used by Gordon and Joos (2004) (mean = 0.010, median = 0.006) and in the Australian sample used by Herbon et al. (2010) (mean = 0.016, median = 0.005 for DTA due to loss carryforwards; mean = 0.023, median = 0.015 for DTA due to timing differences), though they are scaled by market capitalisation. This confirms that recognising deferred tax assets is common practice amongst private Italian firms, despite the high level of book-tax conformity. The major portion of variables entering our tests presents low average values, as these are increases and decreases of income

statement items[1]. The mean (median) change in DTA equals that in Gordon and Joos (2004), which is 0.001 (0.000), while the mean (median) change in DTA in Herbon et al. (2010) is – 0.001 (0.000). The potential room to exercise discretion over the recognition of deferred tax assets is not negligible: the average increase in DTA (0.001), which equals 11% of DTA, would increase the average net earnings (NE) by 4% and would halve (zero out) the average premanaged negative deviation from historical earnings $DHE_{1\ year}$ ($DHE_{3\ years}$). Similarly, the mean (median) change between EBD and NE is positive and equals 0.002 (0.001).

[Insert Table 1 here]

LEV, *BANK*, and *TRADE* highlight that private firms in our sample largely depend on financial institutions and trade credit to finance their investments. The median value of *BANK* (20%) is close to that of the sample of large private German firms investigated by Szczesny and Valentincic (2013) that similarly rely on external debt financing. The median value of *TRADE* (63%) confirms the relevance of this type of financial source for the firms in our sample. The cash effective tax rate ($CETR_{3\ years}$) has a mean (median) value of 46.6% (44.7%), similar to Chircop et al.'s (2023) analysis in a comparable setting, confirming private Italian firms' high tax burden.

5.2 Irregularities in earnings distributions

Following Beaver et al.'s caveat (2007, note 27), we now verify whether the recognition of deferred taxes causes firms to significantly move from a loss position to a small profit

1 The Pearson correlation matrix for the explanatory variables in our regression model (1) is presented in Appendix 3. Few cases register a high correlation term of magnitude. *DHE* appears significantly and negatively correlated with *ΔTLCF* (– 0.42) and positively correlated with *EBD* (0.49). We are not surprised by these correlations, as we have defined these variables as changes in earnings and components of earnings. To further alleviate the risk of multicollinearity, variance inflation factors (VIF) were calculated for all regressions. Because *P<HE_S* registers the highest VIF, equalling 2.9, multicollinearity is not a major issue in our model.

position. Only in the presence of this phenomenon can we invoke the exercise of discretion in these accounts as a credible explanation for irregularities in the distribution of net earnings. Our test focuses on two measures of earnings, both scaled by beginning total assets. One is net earnings (NE), and the other is earnings before deferred taxes (but after current taxes) (EBD). By comparing the distribution of these two measures, we can isolate the effects of the deferred tax expense, whose balance is the only difference between them.

Figure 1 compares the distribution of NE (shaded area) and EBD (line). As in prior studies, the distribution of NE shows a high discontinuity at zero (Coppens & Peek, 2005; Mura & Roberto, 2020): a higher-than-expected number of firms report NE in the interval immediately to the right of zero, and a lower-than-expected number of firms report NE in the interval immediately to the left of zero. A similar pattern is also present in the distribution of EBD but is less pronounced.

[Insert Figure 1 here]

Based on interval widths of 0.005, the standardised difference, which we computed as in Beaver et al.'s analysis (2007, note 12)[2], is 30.94 for the interval immediately to the right of zero in the distribution of EBD, as compared with 48.47 for the equivalent interval in the NE distribution. Both measures are statistically significant, but the higher magnitude in the distribution of NE reflects a more pronounced compression towards zero relative to the distribution of EBD. It is graphically evident that the observations of NE that fall just above zero are more frequent than those of EBD that fall in the same region. The argument that an asymmetric tax effect for profit and loss firms contributes to the discontinuity in the distribution of NE cannot fully explain this finding, as in our comparison, the impact of the

2 The variance of the difference between the observed and expected number of observations for interval i is Npi (1 − pi) + (1/4) N (pi − 1 + pi + 1) (2 − pi − 1 − pi + 1). Under the formula originally employed by Burgstahler and Dichev (1997, note 6)—where the first term in the last parentheses is 1 instead of 2—we obtained similar values, only slightly higher.

current tax expense is absent. Indeed, only an increase in the deferred tax assets and/or a decrease in the deferred tax liabilities can technically explain the high compression towards zero. In addition, the frequency of firms in the interval immediately to the right of the first positive interval [+0.005, +0.01] is significantly less than expected, with a standardised difference of –10.71 in the distribution of NE as compared to –6.77 in the same interval of the EBD distribution.

On closer visual inspection, there are suspicious kinks in the region just below zero that characterise the distribution of NE, which disappear in the distribution of EBD. Here, the standardised difference is –13.88 for the interval immediately to the left of zero in the EBD distribution, compared to –32.92 for the comparable interval in the NE distribution. This stark difference is difficult to explain without inferring the presence of an abnormal use of the deferred tax expense. To further investigate the differences between these two distributions, Table 2 presents a cross-tabulation of frequencies for EBD and NE where the observations are partitioned into four regions: (1) Loss (below zero by a large amount), (2) Small Loss (below zero by a small amount), (3) Small Profit (above zero by a small amount), and (4) Profit (above zero by a large amount) (as in Beaver et al., 2007).

[Insert Table 2 here]

Strikingly, of the 2,281 observations in the Small Loss region of EBD, 1,197 (> 50%) shift into the Small Profit region of Net Earnings. This suggests that crossing the red line is an attractive reporting objective for private Italian firms. The big bath hypothesis is not consistent with this evidence if we consider that out of the 2,281 observations in the region of Small Loss of EBD, only 138 have shifted into the Loss region of NE. There is also a migration of 650 observations from the Profit region of EBD to the Small Profit region of NE. Taken together, these primary findings indicate the presence of earnings smoothing amongst private Italian firms. The irregularities still present in the distribution of EBD cannot exclude

the existence of other accounting items private firms may use to manage earnings in this setting. Yet the abnormal shift of observations that causes firms to move from a small loss before deferred taxes to a small profit after taxes justifies the following deeper investigation of the role of deferred tax assets in this respect.

5.3 Multivariate tests

Table 3 shows the results of our model (equation 1) estimated for the full sample via fixed effects regression and using all firm-years with nonzero *ΔDTA* in the current and prior year.

[Insert Table 3 here]

Notably, the coefficients on premanaged earnings deviations that fall below historical earnings by a small amount (*P<HE_S*) and by a large amount (*P<HE_L*) are significantly positive. In addition, the coefficient on premanaged deviations that fall above historical earnings by a large amount (*P>HE_L*) is significantly negative at customary levels. This is consistent with our first hypothesis discussed in section 3. Private firms appear to take advantage of the discretion over the recognition of deferred tax assets to contrast declining or growing earnings and show a trend of stable profits. Further, consistent with our second hypothesis predicting that private firms' discretion over the recognition of deferred tax assets is associated with small profits, the coefficients on premanaged earnings before deferred taxes that fall below the target of zero/positive earnings by a small amount (*P<ZE_S*) and by a large amount (*P<ZE_L*) are positive and statistically significant at the 1% level. This suggests that private firms manage earnings upwards to offset large and small accounting losses. Conversely, the coefficient on premanaged earnings that fall above zero earnings by a large amount (*P>ZE_L*) is significantly negative, suggesting that private firms manage earnings downwards to offset large profits.

The above coefficients are also economically significant compared to the dependent variable's standard deviation (0.006)[3] (see Mitton, 2022). The largest effects relate to *P<HE_L* (coefficient = 0.0006; t-statistic = 3.07), which has an economic significance of 0.10 (0.0006/0.006), and especially to *P<ZE_S* (coefficient = 0.0022; t-statistic = 19.75; economic significance = 0.37 = 0.0022/0.006), and to *P<ZE_L* (coefficient = 0.0062; t-statistic = 17.68; economic significance = 1.03 = 0.0062/0.006). To provide a benchmark, Frank and Rego (2006) infer that public firms use deferred taxes to manage earnings toward the mean analyst forecast based on an economic significance that equals 0.45 (coefficient on *PMAFE>T* = 0.148; dependent variable standard deviation = 0.327). Thus, avoiding large earnings decreases and reaching zero/positive earnings are important reporting targets amongst private Italian firms.

As predicted by our third hypothesis, the change in *LEV* enters the model with a positive and statistically significant coefficient, suggesting that the recognition of deferred tax assets is associated with the stability of leverage. As regards the economic significance, one standard deviation increase in *ΔLEV* is associated with a standard deviation increase in *ΔDTA* equal to 0.023. These tests also show that the operational factors identified as proxies for the sources of deferred tax assets are statistically significant drivers of their recognition. For example, the coefficients on *ΔTLCF* (change in tax loss carryforwards) and *ΔFSFIRST* (sum of changes in service expenses, bad debt provisions, other contingencies and provisions, etc.)

3 We measure the economic significance following Mitton's (2022) suggestions: for indicator explanatory variables, we measure the change in the dependent variable as a percentage of its standard deviation, associated with a change from zero to one in the explanatory variable; for continuous variables, we measure the change in the dependent variable as a percentage of its standard deviation, associated with a one-standard-deviation change in the explanatory variable (based on the estimated regression coefficient). These standardized measures of economic significance avoid spurious inflation and abnormal high significance when the dependent variable is continuous and includes negative values.

are significantly and positively related to *ΔDTA*. A positive and statistically significant association is also present between Δ*DTA* and changes in deferred tax liabilities (Δ*DTL*), historical earnings (Δ*HEBT*), and future earnings (Δ*EBT*), indicating that private Italian firms are consistent with the prescription of OIC 25 when forecasting future profitability to recognise deferred tax assets. A significantly negative coefficient on CETR suggests that firms that paid lower taxes in the past (higher prior tax avoidance) register a higher increase in DTA. This may signal the ability of a firm to generate future taxable income to offset tax loss carryforwards through tax planning (McGuire et al., 2016).

To test our fourth hypothesis predicting that high-leverage firms avoid earnings decreases more than low-leverage firms, we interact each discretionary variable of our regression model with a dummy variable *D_GEAR*, which takes on the value 1 when the debt-to-asset ratio is equal to or above the 75th percentile, 0 otherwise. Table 4 shows the results of our regression model under this specification. The coefficients on both *P<HE_L* and the interaction term *D_GEAR*P<HE_L* have the same sign and are statistically significant, suggesting that high-leverage firms that report large premanaged deviations from historical earnings use the change in deferred tax assets to counterbalance these decreases even more than low-leverage firms. Similarly, the coefficients on *P<ZE_L* and the interaction term *D_GEAR*P<ZE_L* have the same sign at a statistically significant level. Again, this suggests that high-leverage firms that report premanaged earnings below zero by a large amount use the change in deferred tax assets to counterbalance accounting losses more than low-leverage firms.

[Insert Table 4 here]

To summarise, the battery of change tests discussed in this section indicates that the recognition of deferred tax assets amongst private Italian firms is associated with earnings smoothing toward historical earnings and zero/positive earnings, as well as with stable

financial leverage indicators. These results marginally conform with the extant deferred tax literature mainly focussed on public firms in Anglo-Saxon countries. There, the evidence on deferred tax management is linked to reaching analysts' forecasts, a fundamental target when firms raise public equity and public debt, which loses importance in a private firm setting.

Under US GAAP, deferred tax assets are explicitly offset through the valuation allowance. This contra-asset account is often scrutinised in the deferred tax literature (Bauman et al., 2001; Christensen et al., 2008; Frank & Rego, 2006; Miller & Skinner, 1998; Visvanathan, 1998). Its high visibility is claimed to be a plausible explanation for the United States evidence that does not support the level of manipulation many likely suspected (Graham et al., 2012; Hanlon & Heitzman, 2010). In contrast, our results accord with the predictions of our hypotheses and the peculiarities of our private firm setting, where smoothing earnings to conciliate creditors' expectations is an important financial reporting objective (Bigus & Häfele, 2016; Gassen & Fülbier, 2015). These results also suggest that a high level of book-tax conformity does not necessarily compress the room for accounting discretion: a few cases of disconnection between accounting and taxation may ensure enough judgment to use deferred taxes to flexibly reach financial reporting targets. Moreover, the Civil Code's choice to relegate to the notes information on the unrecognised portion of deferred tax assets—similar to IAS 12—may not be ideal for curbing this practice (Flagmeier, 2022).

5.4 Cross-sectionals

5.4.1 High/low book-tax differences

In this section, we discuss additional analyses conducted to clarify the evidence reported in the previous section. The first concern is to verify the relative role that the two categories of deferred tax components—tax loss carryforwards (TLCF) and expenses that first affect financial statements and then taxable income (FSFIRSFT)—play in reaching the reporting targets. In the context of public firms, TLCF represent the most common and judgmental determinant of deferred tax assets (Gordon & Joos, 2004; Herbon et al., 2010; Miller & Skinner, 1998). About 30% of the United States firm observations in Compustat and about 24% of European private firm observations in Amadeus have negative earnings before taxes (Bethman et al., 2018), and so do almost 26% of our sample observations of private Italian firms. To disentangle the influence of this source of deferred tax assets, in Table 5 – Panel A, we display the results of our regression model when the discretionary variables interact with the dummy variable *D_TLCF*, which takes on the value 1 if firm-years relate to financial years where the level of available TLCF at the beginning of the year is above the median, 0 otherwise. While the discretionary variables remain substantially unaffected by this specification, the incremental effect is statistically significant (in boldface) when *D_TLCF* interacts with each of the three indicator variables for premanaged earnings that deviate from zero earnings. This suggests that tax loss carryforwards are a comfortable avenue to exercise discretion over the recognition of deferred tax assets in the context of private firms, especially to smooth earnings around small profits.

Panel B of Table 5 shows the results of our model when the discretionary variables interact with the dummy variable *D_FSFIRST*—which takes on the value 1 when the level of

FSFIRST components at the beginning of the year is above the median, 0 otherwise. This dummy is a proxy for high and low book-tax differences relating to FSFIRST components. Under this specification, the interaction terms are never statistically significant, indicating that opportunism over the recognition of deferred tax assets does not increase when firms have a high level of book-tax differences stemming from expenses that influence the income statement earlier than the tax return. A possible interpretation is that these FSFIRST components, compared with TLCF usually present a more mechanical reversal, which often must occur in a shorter period. Taken together, these tests further confirm that tax loss carryforwards represent a highly judgmental determinant of deferred tax assets also in the field of private firms.

[Insert Table 5 here]

5.4.2 Regulatory change and financial crisis

A second concern, which still regards the role that unused tax losses may play over the recognition of deferred tax assets, is that during the sample period (2006–2013), various external factors have occurred (i.e., regulatory changes, financial crisis), potentially affecting how private Italian firms assess their deferred tax position. In particular, the fiscal rules related to tax loss carryforwards changed in 2011. We verify whether the abolition of the five-year limit for TLCF and the introduction of the limit of 80% of the annual taxable income against which to offset TLCF have increased the discretion over the recognition of deferred tax assets to reach financial reporting targets. For this purpose, Table 6 – Panel A shows the results of our regression model where the discretionary variables interact with the dummy variable *POST_2010*, which takes on the value 1 if firm-years relate to financial years after 2010, 0 otherwise. The incremental effect is statistically significant and positive (in boldface) when *POST_2010* interacts with the three indicator variables for premanaged earnings that are out of the target of zero earnings. This finding suggests that the regulatory change has

increased the association between the recognition of deferred tax assets and the presence of small annual profits. We also verified whether the 2008 financial crisis affected the recognition of deferred tax assets, as the worsening prospects of many firms may have impacted the assessment of future taxable income (Badenhorst & Ferreira, 2016; Flagmeier, 2022).

Panel B of Table 6 shows the results of our regression model when the discretionary variables interact with the dummy variable *CRISIS*, which takes on the value 1 if firm-years relate to the financial year 2008, 0 otherwise. Again, the coefficients on our discretionary variables remain substantially unaffected by this specification. Yet, the incremental effect is statistically significant and negative (in boldface) when *CRISIS* interacts with the indicator variable for premanaged earnings that are below the target of zero earnings by a small (*P<ZE_S*) and large (*P<ZE_L*) amount. This suggests that firm-years that report small or large losses before deferred taxes during the financial crisis are less associated with increases in recognised deferred tax assets to cross the red line than the corresponding firm-years related to other financial years. In line with the spirit of OIC 25, which requires reasonable certainty on the availability of future taxable income to recognise deferred tax assets, firms do appear more prudent in a financial crisis. The incremental effect is also statistically significant and positive when *CRISIS* interacts with *P>ZE_L*, suggesting that firms are less interested in offsetting large profits during financial crises. This finding also confirms that financial crises impact the recognition of deferred tax assets when tax losses can be carried forward (but cannot be carried back), as in the Australian context (Badenhorst & Ferreira, 2016).

[Insert Table 6 here]

A third concern complicates the interpretation of the results in Panel A of Table 6 if we consider that the regulatory change regarding the recognition of tax loss carryforwards occurred in 2011, three years after the 2008 financial crisis. This raises the issue that the

effect of the 2011 change may be the natural consequence of firms' brightening prospects after the financial crisis. To disentangle the influence of this concurrent explanation, we split the firm-years of our sample into two subsamples, and we reran the regression model of Panel A in Table 6 for each subsample: one includes all firm-years that register a negative cash flow from operations (OCF ≤ 0), which is a proxy for unexpected bad news (Ball & Shivakumar, 2006); the other includes all firm-years that register a positive cash flow from operations as a proxy for favourable future conditions. *Ceteris paribus*, firms experiencing unexpected bad news are likely to have less discretion over the recognition of deferred tax assets than firms experiencing good news, as this condition reduces the availability of future taxable income. Yet, we expect that the regulatory change increases the discretion over recognition of deferred tax assets under both circumstances, as firms can use TLCF with no time limitation.

[Insert Table 7 here]

In Table 7 – Panel A, which regards the subsample of firm-years with negative cash flows, the coefficients on the interaction terms between the discretionary variables and the dummy variable *POST_2010* are statistically significant (in boldface) when premanaged earnings are below the target of zero-earnings by a large amount (*POST_2010*P<ZE_L*), and—to a lesser extent—by a small amount (*POST_2010*P<ZE_S*), as well as when *POST_2010* interacts with the change in leverage. Similarly, the results in Panel B, which relate to firm-years with positive cash flows, show that when firms' prospects are more favourable, the room for discretion is more pronounced after the 2011 regulatory change, as shown by the coefficient on the interaction terms *POST_2010*P<ZE_S* and *POST_2010*P<ZE_L*, which are statistically significant at the 1% and 5% level, respectively. These tests further confirm that the regulatory change has increased discretion in the recognition of deferred tax assets.

5.4.3 Quality of auditing

In high-tax-alignment countries, the strong focus of fiscal authorities on private firms' financial statements aims at enforcing tax rules. Under this perspective, compliance with accounting standards is verified to the extent that these standards affect the tax base. Archival evidence (Van Tendeloo & Vanstraelen, 2008) suggests that in these settings, the intense scrutiny of fiscal authorities also triggers higher auditing quality. This leaves open the question of whether auditors scrutinise with the same accuracy accounting items that do not impact taxable income. Though stemming from fiscal rules temporarily diverging from accounting rules, the deferred tax accounts do not affect the tax payable. This is where tax and financial reporting compliance meet and where a different attitude of auditors may affect the financial reporting costs of this choice. We explicitly deal with this issue with another specification of our model where the dummy variable *Big4*—which takes on the value 1 when the firm's auditors belong to the large international audit firm networks, 0 otherwise—interacts with the discretionary variables of our regression model.

[Insert Table 8 here]

Table 8 shows that while the coefficient on all discretionary variables remains substantially unaffected after controlling for the influence of *Big4*, the coefficient on each interaction term is never statistically significant. The only exception is *P>ZE_L*, whose coefficient loses significance after controlling for the influence of *Big4*, while the coefficient on the interaction term (*Big4*P>ZE_L*) is negative and statistically significant. This suggests that the association between *ΔDTA* and offsetting large profits increases when private firms are audited by Big 4 firms. Overall, the exercise of discretion over deferred tax assets is not limited by the quality of auditors, supporting the view that accounting treatments that do not influence taxable income are a comfortable avenue to reach financial reporting objectives other than minimising the tax payable.

5.5 Additional tests for suspect firms

To increase the power of tests that detect earnings management, prior literature suggests that firm-years with earnings right at or just above the earnings targets are the situations in which earnings management is more likely to occur (Burgstahler & Dichev, 1997; Degeorge et al., 1999). Accordingly, we define two subsamples of suspect firm-years as in Zang (2012): (1) suspects just meeting/beating prior earnings are firm-years with change in NE over beginning total assets between 0 and 0.002; (2) suspects just meeting/beating zero earnings are firm-years with current net earnings over beginning total assets between 0 and 0.005. During the sample period, there are 2,525 firm-years just meeting/beating historical earnings and 6,193 firm-years just meeting/beating zero earnings.

[Insert Table 9 here]

Table 9 – Panel A reports descriptive statistics comparing the variables of each subsample of suspect firm-years to the rest of the sample. The average *NE* and *EBD* in both subsamples are significantly lower than the rest of the sample. This also applies to the average *DTA*, though its value relative to the average *NE* gains in importance when we look at each subsample. For firm-years just beating prior earnings, the average *DTA* (0.006) is almost 50% of the average *NE* (0.013), and the average change in *DTA* (0.001) is about 8% of the average *NE*. For firm-years just beating zero earnings, the average *DTA* (0.006) is three times higher than the average *NE* (0.002), while for the rest of the sample, the average *DTA* is around one-third 33% of the average *NE*. Interestingly, the average *LEV* (0.72/0.75), *BANK* (0.28/0.31), and *TRADE* (0.67/0.70) for each subsample, respectively, is higher than the corresponding value of the rest of the sample at a statistically significant level. This is consistent with the argument that high-leverage firms have more incentive to offset declining earnings or losses, whether their high level of liabilities (*LEV*) is due to finance (*BANK*) or trade credit (*TRADE*). Suspect firm-years also show statistically different means in changes in TLCF—further

suggesting that the discretion over deferred tax assets is higher in the presence of tax loss carryforwards—and higher CETR, confirming that minimising the tax payable is an important incentive for suspect firms. Suspects just meeting zero earnings also show a higher average decrease in historical earnings ($\Delta HEBT_{t-2}$) and future profitability (ΔEBT_{t+1}), raising doubts about these firms' ability to realise their deferred tax assets.

Panel B of Table 9 shows the estimation results when we apply our main regression model to each subsample. The first column relates to suspects reaching prior earnings, and the second refers to suspects reaching zero earnings. Both regressions register a common trend: the coefficients on the discretionary variables that proxy the reached target (prior and zero earnings, respectively) not only remain statistically significant but register a higher magnitude and economic significance than the full sample (see Table 3). In contrast, the coefficients on the operational variables display lower statistical and economic significance. Specifically, consistent with our first hypothesis, when suspects are firm-years reaching prior earnings (column 1 of Panel B), the largest effects relate to *P<HE_L* (coefficient = 0.0150; t-statistic = 7.28; economic significance 4.41 = 0.015/0.0034)[4], *P>HE_L* (coefficient = -0.0043; t-statistic = -7.32; economic significance = -1.26 = 0.0043/0.0034), and *P<HE_S* (coefficient = 0.0024; t-statistic = 21.25; economic significance 0.71 = 0.024/0.0034). Similarly, consistent with our second hypothesis, when suspects are firm-years just beating/meeting zero earnings (column 2), the most significant effects relate to *P<ZE_L* (coefficient = 0.0225; t-statistic = 3.02; economic significance 5.92 = 0.0225/0.0038) and *P<ZE_S* (coefficient = 0.0026; t-statistic = 11.28; economic significance = 0.68 = 0.0026/0.0038). In comparison with the full sample, *P>ZE_L* (coefficient = 0.0018; t-statistic = 4.61; economic significance 0.47 = 0.0018/0.0038) changes sign. This suggests that when an increase in deferred tax liabilities

4 The untabulated standard deviation of the dependent variable, ΔDTA, equals 0.0034 and 0.0038 for suspect firm-years reaching prior year earnings and zero earnings, respectively.

turns a large profit into a loss, suspect firms recognise deferred tax assets to reach the target of a small profit.

When we focus on the influence of operational factors, interestingly and worryingly, the coefficients on *ΔTLCF*, *ΔFSFIRST*, ΔHEBT, and *ΔEBT* lose magnitude and statistical significance in both specifications compared to the full sample. This further suggests that suspects recognise deferred tax assets giving more importance to financial reporting targets than to their legitimate sources and future profitability.

5.6 Robustness tests

In this section, we discuss robustness tests conducted to corroborate the evidence reported in the previous sections. A first test relates to Graham et al.'s (2012) argument that different specifications of earnings deviation from historical performance might explain different findings in the extant literature. In this respect, Schrand and Wong (2003) employ a three-year earnings average as a historical earnings target instead of last year's earnings as we have done in our model (similar to Bauman et al., 2001, and Frank & Rego, 2006). Additionally, a few studies (Gordon & Joos, 2004; Miller & Skinner, 1998; Schrand & Wong, 2003; Visvanathan, 1998) employ continuous variables to identify the premanaged deviation from historical earnings in place of the indicator variables we have adopted in our main model (as in Frank & Rego, 2006). To cope with this issue, we refined the discretionary variables of our model according to the following specifications:

One-sided earnings management:

$$\Delta DTA_{it} = \alpha + \beta_1 DHE_{it} + \beta_2 \Delta LEV_{it} + \sum_q \beta_q OPERATIONAL + \sum_r \beta_r CONTROL_{pt} + \varepsilon_{1t} \quad (2a)$$

Two-sided earnings management:

$$\Delta DTA_{it} = \alpha + \beta_3 ABOVE\_HE_{i,t} + \beta_4 BELOW\_HE_{i,t} + \beta_5 ABOVE\_LEV_{i,t} + \beta_6 BELOW\_LEV_{i,t} + \sum_q \beta_q OPERATIONAL + \sum_r \beta_r CONTROL_{pt} + \varepsilon_{1t} \quad (2b)$$

In equation (2a), the premanaged deviation from historical earnings (*DHE*) is a continuous variable that equals the difference between current EBD and the average of the last three-year net earnings (scaled by beginning total assets; as in Schrand & Wong, 2003). We expect a negative relation between *ΔDTA* and *DHE*, as firms will report a positive (negative) change in the deferred tax assets to offset a negative (positive) deviation from previous earnings.

Still following Schrand and Wong (2003), we also perform separate measurements of *DHE* and *ΔLEV* to differentiate one-sided earnings management from two-sided earnings management. The proxies *ABOVE_HE* and *BELOW_HE*, *ABOVE_LEV* and *BELOW_LEV*, play this role (see equation 2b). *ABOVE_HE* equals *DHE* when the earnings deviation from previous periods is positive, 0 otherwise. *BELOW_HE* equals *DHE* when the earnings deviation from prior periods is negative, 0 otherwise. A negative association is predicted in both cases: a positive (negative) change in *DTA* will aim at offsetting a negative (positive) deviation from historical earnings. Similarly, *ABOVE_LEV* equals *ΔLEV* when the change in LEV is positive, 0 otherwise. *BELOW_LEV* equals *ΔLEV* when the change in LEV is negative, 0 otherwise.

[Insert Table 10 here]

The two specifications in Table 10 reinforce one another to support the prediction of our first and third hypotheses. The coefficient on *DHE* is negative and significant at the 1% level (coefficient = -0.0163, t = -13.94 in column 1). Both upward and downward earnings management appear in place to meet historical earnings targets. The negative coefficient on *ABOVE_HE* confirms that private firms use discretion to recognise deferred tax assets to offset a positive deviation from historical earnings. The negative coefficient on *BELOW_HE* indicates how firms use discretion over deferred tax asset to mitigate earnings decreases. The

coefficients on *ABOVE_LEV* and *BELOW_LEV*, which are positive and statistically significant at customary levels, further support the validity of our leverage hypothesis.

We also verified the impact of the 2008 Finance Act that reduced the sources that can give rise to tax-first deferred tax liabilities, potentially affecting the availability of future reversals against which to realise deferred tax assets. However, the untabulated results show that the coefficients on the discretionary variables in our main model remain substantially unaffected after controlling for the influence of this regulatory change that increased book-tax conformity.

We also conducted other robustness checks. First, we ran separate regressions, including one discretionary variable at a time. We adopted a two-stage procedure: in the first stage, we regress the change in DTA against the operational and control variables of our main model; in the second stage, we regress the residuals of the first stage against the discretionary variables. We ran separate regressions for the subsample of high-leverage firms (equal to or above the 75th percentile of the debt-to-asset ratio) and low-leverage firms (below the 75th percentile). We also checked the validity of our fourth hypothesis by interacting alternative variables in place of *D_GEAR*, such as *TRADE* (trade credit to total assets) and *BANK* (bank credit to total assets), respectively, for determining the dummy variable for high-leveraged companies (those above the 75th percentile) in order to disentangle the effect of the two sources of financing on the recognition of deferred tax assets. Finally, we determined the discretionary indicator variables with the thresholds of 7% and 3% of total assets, and ran new regressions. Overall, the related untabulated results show that discretionary variables keep the same sign, and significance remains at customary levels, with only slight variations in the magnitude and statistical significance of coefficients.

To recap, these tests further support the hypothesis that private Italian firms flexibly finalise the deferred tax accounts to reach different reporting targets. The discretion over the

recognition of deferred tax assets allows private firms to counterbalance the nontax costs of an aggressive tax minimisation strategy, especially in the presence of unused tax losses, regardless of firms' audit quality.

6 Conclusion

This study investigates how opportunistic incentives affect the recognition of deferred tax assets of private Italian firms complying with local GAAP in 2006–2013. Consistent with the predictions of our hypotheses, the results show that the discontinuity at zero in the distribution of net earnings cannot be fully explained without invoking an abnormal use of the deferred tax expense. A transition matrix shows a significant shift of observations from the region of small losses before deferred taxes into the region of small profits. By regressing the change in recognised deferred tax assets on alternative proxies for operational and discretionary factors, we find compelling evidence supporting the prediction that private firms use the tax accounts to smooth earnings, meet or beat historical earnings, avoid losses, and manage leverage. The pattern of discretionary changes is consistent with income-increasing earnings management when premanaged earnings decline and/or are negative, and income-decreasing earnings management when premanaged earnings grow and/or are positive. We also show that if private firms are more financially leveraged, the association between changes in recognised deferred tax assets and large negative deviations from historical and zero earnings becomes more intense than in low-leverage firms. The association between changes in deferred tax assets and zero earnings also increases in the presence of tax loss carryforwards, and after the regulatory change removing their expiration time limit. When we focus on suspect firms that successfully reach historical or zero earnings, we document that the influence of operational factors over the recognition of deferred tax assets decreases. In contrast, that of discretionary factors dramatically increases.

Our findings have implications for standard setters and regulators interested in improving the enforcement of financial reporting standards amongst private firms. The inability of external controls to moderate such discretion has dramatic implications for the quality of accounting earnings. An interesting avenue for future research is verifying whether this weak scrutiny systematically extends to accounting treatments that do not impact the tax payable. The risk is that the tax focus, which legitimately drives fiscal authorities when using financial statements, may obfuscate the lens of auditors, whose goal is to ensure a faithful representation of the underlying economics.

Our findings only partly accord with the extant literature investigating public firms' behaviour in other institutional settings (United States, Australia, etc.) where the presence of deferred tax management is mainly documented in reaching analysts' forecasts and managing leverage (Frank & Rego, 2006; Gordon & Joos, 2004; Herbon et al., 2010). Yet this evidence is in line with the setting of this analysis. A high level of book-tax conformity does not seem able to compress opportunism over the recognition of deferred tax assets, which appears as an effective avenue to counterbalance the side effects of a tax-minimisation strategy in order to reconcile creditors' expectations. However, these results refer to a sample of independent private firms that, though large, still relates to only one European country. Further research may usefully explore whether these findings are generalisable to private firms operating in similar countries with high book-tax conformity and large use of private credit.

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References

Atwood, T., Drake, M., & Myers, L. (2010). Book-tax conformity, earnings persistence and the association between earnings and future cash flows. *Journal of Accounting and Economics, 50*(1), 111–125.

Badenhorst, W. M., & Ferreira, P. H. (2016). The financial crisis and the value-relevance of recognised deferred tax assets. *Australian Accounting Review*, *26*(3), 291–300. https://doi.org/10.1111/auar.12101

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics, 39*(1), 83–128.

Ball R., & Shivakumar, L. (2006). The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research*, *44*(2), 207–242.

Bauman, C., Bauman, M., & Halsey, R. (2001). Do firms use the deferred tax asset valuation allowance to manage earnings? *Journal of the American Taxation Association, 31*, 77–104.

Beaver, W. H., McNichols, M. F., & Nelson, K. K. (2007). An alternative interpretation of the discontinuity in earnings distributions. *Review of Accounting Studies, 12*, 525–556.

Bethman, I., Jacob M., & Mueller, M. A. (2018). Tax loss carrybacks: Investment stimulus versus misallocation. *The Accounting Review*, *93*(4), 101–125.

Beuselinck, C., Elfers, F., Gassen, J., & Jochen Pierk, P. (2023). Private firm accounting: The European reporting environment, data and research perspectives, *Accounting and Business Research*, *53*(1), 38–82.

Bianchi, P. (2018). Auditors joint engagement and audit quality: Evidence from Italian private companies. *Contemporary Accounting Research*, *35*(3), 1533–1577.

Bigus, J., & Häfele, S. (2016). Shareholder loans and earnings smoothing: Empirical findings from German private firms. *European Accounting Review, 27*(1), 37–74.

Bigus, J., & Hillebrand, C. (2017). Bank relationships and private firms' financial reporting quality. *European Accounting Review, 26*(2), 379–409.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99–126.

Burkart, M., & Ellingsen, T. (2004). In-kind finance: A theory of trade credit. *American Economic Review, 94*(3), 569–590.

Cascino, S., Clatworthy, M., García Osma, B., Gassen, J., Imam, S., & Jeanjean, T. (2014). Who uses financial reports and for what purpose? Evidence from capital providers. *Accounting in Europe, 11*(2), 185–209.

Chen, W., Hribar, P., & Melessa, S. (2018). Incorrect inferences when using residuals as dependent variable. *Journal of Accounting Research*, *56*(3), 751–796.

Chircop, J., Fabrizi, M., Malspina, P., & Parbonetti, A. (2023). Anti-mafia police actions, criminal firms, and peer firm tax avoidance. *Journal of Accounting Research*, *61*(1) 243–277.

Christensen, T., Paik, G., & Stice, E. (2008). Creating a bigger bath using the deferred tax valuation allowance. *Journal of Business Finance & Accounting, 35*(5-6), 601–625.

Coppens, L., & Peek, E. (2005). An analysis of earnings management by European private firms. *Journal of International Accounting, Auditing and Taxation, 15*(1), 1–17.

Degeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings management to exceed thresholds. *Journal of Business, 72*, 1–33.

Dhaliwal, D., Gleason, C. A., & Mills, L. F. (2004). Last-chance earnings management: Using the tax expense to meet analyst forecasts. *Contemporary Accounting Research, 21*(2), 431–458.

Flagmeier, V. (2022). The information content of deferred tax under IFRS. *European Accounting Review, 31*(2), 495–518.

Frank, M. M., & Rego, S. O. (2006). Do managers use the valuation allowance account to manage earnings around certain earnings targets? *The Journal of the American Taxation Association, 28*(1), 43–65.

Gaeremynck, A., & Veugelers, R. (1999). The revaluation of assets as a signalling device: A theoretical and an empirical analysis. *Accounting and Business Research, 29*(2), 123–138.

Garrod, N., Kosi, U., & Valentincic, A. (2008). Asset write-offs in the absence of agency problems. *Journal of Business Finance and Accounting, 35*(3-4), 307–330.

Gassen, J., & Fülbier, T. W. (2015). Do creditors prefer smooth earnings? Evidence from European private firms. *Journal of International Accounting Research, 14*(2), 151–180.

Gavana, G., Guggiola, G., & Marenzi, A. (2013). Evolving connections between tax and financial reporting in Italy. *Accounting in Europe, 10*(1), 43–70.

Gordon, E. A., & Joos, E. A. (2004). Unrecognized deferred taxes: Evidence from the U.K. *The Accounting Review, 79*(1), 97–124.

Graham, J. R., Jana, S. R., & Shackelford, D. A. (2012). Research in accounting for income taxes. *Journal of Accounting and Economics, 53*(1-2), 412–434.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*(3), 127–178.

Herbon, K., Tutticci, I., & Khor, P. S. (2010). Changes in unrecognised deferred tax accruals from carryforward losses: Earnings management or signalling? *Journal of Business Finance and Accounting, 37*(7), 763–791.

Holland, K., & Jackson, H. J. (2004). Earnings management and deferred tax. *Accounting and Business Research, 34*(2), 101–123.

Hope, O., Thomas, W. B., & Vyas, D. (2017). Stakeholder demand for accounting quality and economic usefulness of accounting in U.S. private firms. *Journal of Accounting and Public Policy, 36*(1), 1–13.

Hope, O., & Vyas, D. (2017). Private company finance and financial reporting. *Accounting and Business Research, 47*(5), 506–537.

Kosi, U., & Valentincic, A. (2013). Write-offs and profitability in private firms: Disentangling the impact of tax-minimisation incentives. *European Accounting Review, 22*(1), 117–150.

Laux, R. C. (2013). The association between deferred tax liabilities and future tax payments. *The Accounting Review*. *88*(4), 1357–1383.

Leuz, C. (1998). The role of accrual accounting in restricting dividends to shareholders. *European Accounting Review, 7*(4), 579–604.

Leuz, C. (2010). Different approaches to corporate reporting regulation: How jurisdictions differ and why. *Accounting and Business Research, 40*(3), 229–256.

Mafrolla, E., & D'Amico, E. (2017). Borrowing capacity and earnings management: An analysis of private loans in private firms. *Journal of Accounting and Public Policy*, *36*(4), 284–301

Max, M., Whielhouwer, J., & Wiersma, E. (2023). Estimating and imputing missing tax loss carryforward data to reduce measurement error. *European Accounting Review*, *32*(1), 55–84. https://doi.org/10.1080/09638180.2021.1924812

McGuinness, G., Hogan, T., & Powell, R. (2018). European trade credit and SME survival. *Journal of Corporate Finance, 49*(2), 81–103.

McGuire, S. T., Neuman, S. S., Olson, A. J., & Omer, T. C. (2016). Do investors use prior tax avoidance when pricing tax loss carryforwards? *The Journal of the American Taxation Association*, *38*(2), 27–49.

Miller, G. S., & Skinner, D. J. (1998). Determinants of the valuation allowance for deferred tax under SFAS No. 109. *Contemporary Accounting Research, 73*(2), 213–233.

Mills, L. F., & Newberry, K. (2001). The influence of tax and nontax costs on book-tax reporting differences: Public and private firms. *Journal of the American Taxation, 23*(1), 1–19.

Mitton, T. (2022). Economic significance in corporate finance. *The review of corporate finance studies* https://doi.org/10.1093/rcfs/cfac008.

Mura, A., & Ecca, V. (2022). The impact of peer effects on earnings smoothing. *Rivista Italiana di Ragioneria e di Economia Aziendale, 122*(5-6-7-8), 210–224.

Mura, A., Emmanuel, C., & Vallascas, F. (2013). Challenging the reliability of comparables under profit-based transfer pricing methods. *Accounting and Business Research, 43*(5), 483–505.

Mura, A., & Roberto, G. (2014). Nature and duration of the accounting differences between Italian and US GAAP: A case study on conservatism. *Journal of Applied Accounting Research, 15*(1), 2–21.

Mura, A., & Roberto, G. (2020). Realised earnings vs smooth earnings: The choice of Italian private firms. *Rivista Italiana di Ragioneria e di Economia Aziendale, 120*(3), 336–354.

Nagar, V., Petroni, K., & Wolfenzon, D. (2011). Governance problems in closely held corporations. *Journal of Financial and Quantitative Analysis, 46*(4), 943–966.

Nobes, C. (2003). *A conceptual framework for the taxable income of businesses, and how to apply it under IFRS*. Certified Accountants Educational Trust.

Nobes, C., & Schwencke, H. R. (2006). Modelling the links between tax and financial reporting: A longitudinal examination of Norway over 30 years up to IFRS adoption. *European Accounting Review, 15*(1), 63–87

Oliveras, E., & Puig, X. (2005). The changing relationship between tax and financial reporting in Spain. *Accounting in Europe*, 2(1), 195–207.

Phillips, J., Pincus, M., & Rego, S. O. (2003). Earnings management: New evidence based on deferred tax expense. *The Accounting Review*, *78*(2), 491–521.

Prencipe, A., Bar-Yosef, S., Mazzola, P., & Pozza, L. (2011). Income smoothing in family-controlled companies: Evidence from Italy. *Corporate Governance: An International Review, 19*(6), 529–546.

Scholes, M., & Wolfson, M. (1992). *Taxes and business strategy: A planning approach*. Prentice-Hall, Inc.

Schrand, C. M., & Wong, M. H. (2003). Earnings management using the valuation allowance for deferred tax assets under SFAS No. 109. *Contemporary Accounting Research, 20*(3), 579–611.

Shackelford, D. A., & Shelvin, T. (2001). Empirical tax research in accounting. *Journal of Accounting and Economics, 31*(1-3), 321–387.

Skinner, D. J. (2008). The rise of deferred tax assets in Japan: The role of deferred tax accounting in the Japanese banking crisis. *Journal of Accounting and Economics, 46*(2-3), 218–239.

Szczesny, A., & Valentincic, A. (2013). Asset write-offs in private firms: The case of German SMEs. *Journal of Business Finance & Accounting, 40*(3), 285–317.

Tang, T. Y. H. (2015). Does book-tax conformity deter opportunistic book and tax reporting? An international analysis. *European Accounting Review, 42*(3), 441–469.

Tokey, J. W. (1962). The future of data analysis. *The Annals of Mathematical Statistics, 33*(1), 1–67.

Trueman, B., & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research, 26*(Suppl.), 127–139.

Vanstraelen, A., & Schelleman, C. (2017). Auditing private companies: What do we know? *Accounting and Business Research, 47*(5), 565–584.

Van Tendeloo, B., & Vanstraelen, A. (2008). Earnings management and audit quality in Europe: evidence from the private client segment market. *European Accounting Review, 17*(3), 447–469.

Visvanathan, G. (1998). Deferred tax valuation allowances and earnings management. *Journal of Financial Analysis, 3*(1), 6–15.

Zang, A. Y. (2012). Evidence on the trade-off between real activity manipulation and accrual-based earnings management. *The Accounting Review*, *87*(2), 676–703.

Appendix 1: Variable definitions

Earnings measures for the distribution analysis	
NE	= net earnings divided by beginning total assets.
EBD	= earnings before deferred taxes divided by beginning total assets.
Firm-specific determinants	
DTA€	= deferred tax assets in Euros.
DTA	= deferred tax assets divided by beginning total assets.
DTL€	= deferred tax liabilities in Euros.
DTL	= deferred tax liabilities by beginning total assets.
LEV	= leverage, calculated as the sum of short and long-term debts (excluding deferred tax liabilities) divided by total assets adjusted for recognised net deferred taxes.
BANK	= sum of short- and long-term bank credits divided by total assets.
TRADE	= sum of short- and long-term trade credits divided by total assets.
Variables in changes tests	
Dependent variable	
ΔDTA	= change in deferred tax assets divided by beginning total assets (a positive balance of ΔDTA is income, a negative ΔDTA is an expense.)
Discretionary variables	
EBD	= earnings before deferred taxes divided by beginning total assets.
$DHE_{1\ year}$	= difference between current *EBD* and prior year net earnings divided by beginning total assets.
$DHE_{3\ years}$	= difference between current *EBD* and the average of prior 3-year net earnings divided by beginning total assets.
P<HE_S	= dummy variable taking the value 1 if *DEVHIST* < 0 and > -0.05.
P<HE_L	= dummy variable taking the value 1 if *DEVHIST* < -0.05.
P>HE_L	= dummy variable taking the value 1 if *DEVHIST* > 0.05.
P<ZE_S	= dummy variable taking the value 1 if *EBD* < 0 and > -0.05.
P<ZE_L	= dummy variable taking the value 1 if *EBD* < -0.05.
P>ZE_L	= dummy variable taking the value 1 if *EBD* > 0.05.
ABOVE_HE	= $DHE_{3\ years}$ *if* $DHE_{3\ years} > 0$, otherwise 0.
BELOW_HE	= $DHE_{3\ years}$ if $DHE_{3\ years} < 0$, otherwise 0.
ΔLEV	= change in LEV.
ABOVE_LEV	= ΔLEV if $\Delta LEV > 0$, otherwise 0.
BELOW_LEV	= ΔLEV if $\Delta LEV < 0$, otherwise 0.
Operational and control variables	
$\Delta TLCF$	= change in tax loss carryforwards divided by beginning total assets.
$\Delta SERV$	= change in service costs divided by beginning total assets.
ΔAM_INT	= change in amortisation of intangible fixed assets divided by beginning total assets.
$\Delta OTHER\_PROV$	= change in other provisions and contingencies divided by beginning total assets.
ΔBAD_DEBT	= change in provision for bad debts divided by beginning total assets.
ΔINT	= change in interest expenses divided by beginning total assets.
$\Delta FSFIRST$	= sum of ΔSERV, ΔAM_INT, ΔOTHER_PROV, ΔBAD_DEBT, and ΔINT.
ΔDTL	= change in deferred tax liabilities.
$\Delta HEBT_{t-2}$	= change in earnings before taxes from $t-2$ to $t-1$ divided by beginning total assets.
ΔEBT_{t+1}	= change in earnings before taxes from t to $t+1$ divided by beginning total assets.
$CETR_{3\ years}$	= average value of current tax expense divided by earnings before taxes over years t,

	t_{-1}, t_{-2}, multiplied by −1. The variable is bounded between 0 and −1.
Big4	= dummy variable taking the value 1 if a firm is audited by a Big 4 auditing firm, 0 otherwise.
SIZE	= log of total sales.
GOV	= number of owners of the firm (either natural or legal persons).

Appendix 2: Estimation of tax loss carryforwards (TLCF)

This appendix explains the algorithm we adapted from Max et al. (2023) to estimate the amount of tax loss carryforwards in our private Italian firm setting. As the amount of TLCF is not available on the AIDA database, we estimated it using a measure of taxable income (TI), as in Shevlin (1990), and keeping track of the possibilities to carry forward losses according to their expiration schedule (next five years for losses incurred up until 2010, no time limit for losses incurred after 2010) and to their annual deductibility rate (100% of taxable income for TLCFs used up until 2010; 80% of taxable income for TLCFs used after 2010). Precisely, taxable income is estimated by $TI_{it} = PTBI_{it} - (\Delta DTL_{it}/\tau_t)$, where TI is taxable income; PTBI is pretax book income, computed as AIDA earnings before taxes (EBT) divided by (1 – statutory tax rate). ΔDTL is the change in deferred tax liabilities; τ is the statutory tax rate, which equals 0.33 (years 2006–2007) and 0.275 (years 2008–2013).

We initially impute taxable income for year t equal to TI_t for all firm-year observations. Next, we set the first firm-year TLCF equal to TI alone in that first year if TI is negative, 0 otherwise. The underlying assumption is that the firm had no TLCF before the firm's first year in the sample. Then, chronologically for each firm, we estimate the next-year TLCF based on the nonexpired portion of prior-year TLCF (NE_TLCF_{t-1}) and current-year taxable income (TI_t) according to the following procedure:

(1) when TI_t is negative:

a) if $NE\_TLCF_{t-1} > 0$, $TLCF_t = NE\_TLCF_{t-1} + TI_t$

b) if $NE\_TLCF_{t-1} = 0$, $TLCF_t = TI_t$

(2) when TI_t is positive:

a) if $TI_t > NE\_TLCF_{t-1}$, $TLCF_t = 0$ (no new $TLCF_t$ arises, as all TLCFs are used);

b1) (up until year 2010) if $NE\_TLCF_{t-1} > TI_t$, $TLCF_t = NE\_TLCF_{t-1} - TI_t$

b2) (after year 2010) if $NE\_TLCF_{t-1} > TI_t$, $TLCF_t = NE\_TLCF_{t-1} - TI_t \times (0.80)$

Appendix 3: Pearson correlation coefficients

	ΔDTA	$\Delta TLCF$	$\Delta OTHER$	ΔDTL	$\Delta HEBT_{t-2}$	ΔEBT_{t+1}	$DHE_{1\ year}$	EBD	ΔLEV	$CETR_{3years}$	$SIZE$	GOV
ΔDTA	1.0000											
$\Delta TLCF$	**0.2512**	1.0000										
$\Delta FSFIRST$	**0.2199**	**0.1238**	1.0000									
ΔDTL	**0.0407**	**0.1360**	**0.0237**	1.0000								
$\Delta HEBT_{t-2}$	**-0.0230**	**-0.1327**	0.0070	0.0089	1.0000							
ΔEBT_{t+1}	**0.1362**	**0.2097**	**0.0587**	**-0.0207**	**-0.1133**	1.0000						
$DHE_{1\ year}$	**-0.2337**	**-0.4238**	**-0.1341**	**0.0535**	**-0.2203**	**-0.2557**	1.0000					
EBD	**-0.1886**	**-0.3525**	**-0.0765**	**0.0621**	**0.2138**	**-0.2858**	**0.4941**	1.0000				
ΔLEV	**0.1375**	**0.1249**	**0.1173**	**0.0107**	**-0.0991**	**0.1828**	**-0.2408**	**-0.2510**	1.0000			
$CETR_{3\ years}$	0.0026	**0.0573**	-0.0083	-0.0063	**-0.0133**	**0.0334**	0.0080	**0.0285**	**0.0334**	1.000		
$SIZE$	**0.0119**	**-0.0212**	0.0057	0.0081	**0.0300**	**-0.0407**	**0.0327**	**0.0805**	-0.0066	**-0.0441**	1.0000	
GOV	-0.0024	-0.0067	-0.0043	0.0018	0.0038	-0.0012	0.0039	0.0060	-0.0003	**-0.0075**	**0.0112**	1.0000

Note: This table reports correlation coefficients for explanatory variables employed in the change tests discussed in section 4. Correlation coefficients statistically significant at the 0.05 level are shown in boldface. See Appendix 1 for variable definitions.

Table 1. Descriptive statistics

	N	Mean	Median	S. Dev	P1	P99
Earnings measures for the distribution analysis						
NE	40,058	0.026	0.013	0.059	-0.139	0.251
EBD	40,058	0.024	0.012	0.060	-0.149	0.251
Firm-specific determinants						
DTA€	40,058	€ 452,447	€ 74,931	€ 1,223,011	0	€ 8,092,000
DTA	40,058	0.009	0.004	0.013	0	0.076
DTL€	40,058	€ 208,245	€ 2,000	€ 698,338	0	€ 4,777,930
DTL	40,058	0.005	0.000	0.016	0	0.082
LEV	40,058	0.666	0.699	0.201	0.155	0.984
BANK	40,058	0.215	0.195	0.186	0	0.658
TRADE	40,058	0.604	0.632	0.209	0.011	0.957
Variables in change tests of deferred taxes						
Change in deferred tax assets (dependent variable)						
ΔDTA	40,058	0.001	0.000	0.006	-0.017	0.027
Discretionary variables (independent variables)						
$DHE_{1\ year}$	40,058	-0.002	-0.001	0.048	-0.169	0.170
$DHE_{3\ years}$	40,058	-0.001	-0.001	0.047	-0.163	0.165
ΔLEV	40,058	-0.016	-0.011	0.066	-0.234	0.183
Operational and other control variables (independent variables)						
$\Delta TLCF$	40,058	0.044	0	0.047	-0.190	0.244
$\Delta FSFIRST$	40,058	0	0	0.012	-0.051	0.052
ΔDTL	40,058	0	0	0.001	-0.002	0.001
$\Delta HEBT_{t-2}$	40,058	0	0	0.056	-0.211	0.187
ΔEBT_{t+1}	40,058	-0.002	-0.000	0.087	-0.233	0.211
$CETR_{3\ years}$	40,058	-0.466	-0.447	0.220	-0.982	0
Big4	40,058	0.143	0.000	0.350	0	1
SIZE	40,058	17.007	16.795	0.925	15.487	19.940
GOV	40,058	4.429	3	13.39	1	37

Note: This table reports basic descriptive statistics for the variables employed in the main empirical analysis. All accounting variables have been Winsorised at the 1% and 99% percentiles. The sample has been selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 2. Cross-tabulation of frequency distributions: comparison of net earnings (NE) and earnings before deferred taxes (EBD)

	Earnings before deferred taxes (EBD)				
Net earnings (NE)	Loss	Small Loss	Small Profit	Profit	All Obs.
Loss	7,164	138	18	28	7,348
Small Loss	409	786	143	32	1,370
Small Profit	254	1,197	4,092	650	6,193
Profit	138	160	928	23,921	25,147
All Obs.	7,965	2,281	5,181	24,631	40,058

Note: This table reports a cross-tabulation of frequency distributions of NE and EBD. Based on interval widths of 0.005, Loss includes observations in the portfolio to the left of the first portfolio below zero; Small Loss includes observations in the portfolio immediately below zero; Small Profit includes observations in the first portfolio above zero; and Profit includes observations to the right of the first portfolio above zero. See Appendix 1 for variable definitions.

Table 3: Determinants of change in recognised deferred tax assets

Dependent variable: Change in deferred tax assets (*ΔDTA*)			
	Expected sign	**Coefficient**	**t-statistics**
Discretionary variables			
P<HE_S	+	0.0001*	1.88
P<HE_L	+	0.0006***	3.07
P>HE_L	-	-0.0002***	-2.76
P<ZE_S	+	0.0022***	19.75
P<ZE_L	+	0.0062***	17.68
P>ZE_L	-	-0.0004***	-3.04
Δ*LEV*	+	0.0021***	3.31
Operational variables			
ΔTLCF	+	0.0104***	7.26
ΔFSFIRST	+	0.0803***	18.75
ΔDTL	+	0.1977***	4.93
$\Delta HEBT_{t-2}$	+	0.0014	1.60
ΔEBT_{t+1}	+	0.0026***	3.31
Other control variables			
$CETR_{3\ years}$	?	-0.0017***	-5.92
SIZE	?	0.0008***	3.96
GOV	?	0.0000*	1.86
Constant		-0.0100***	-3.01
Time dummies		Yes	
Sector dummies		Yes	
R-squared		0.4216	
Observations		40,058	
Firms		11,196	

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: This table reports the estimation results for the one-stage regression model outlined in section 4.2. The regression analysis was conducted for the full sample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 4. Discretionary factors interacting with *D_GEAR*

Dependent variable: Change in deferred tax assets (*ΔDTA*)			
	Expected sign	**Coefficient**	**t-statistics**
Discretionary variables			
D_GEAR	?	-0.0010***	-5.68
P<HE_S	+	0.0002***	3.00
*D_GEAR*P<HE_S*	+	0.0002*	1.87
P<HE_L	+	0.0003**	2.21
D_GEAR*P<HE_L	+	**0.0008*** **	**3.14**
P>HE_L	-	-0.0002*	-1.81
*D_GEAR*P>HE_L*	?	0.0007	1.073
P<ZE_S	+	0.0009***	5.50
*D_GEAR*P<ZE_S*	+	0.0002	1.07
P<ZE_L	+	0.0048***	14.46
D_GEAR*P<ZE_L	+	**0.0015*** **	**3.35**
P>ZE_L	-	-0.0008***	-5.99
*D_GEAR*P>ZE_L*	?	0.0002	1.06
ΔLEV	+	0.0040***	5.50
*D_GEAR*ΔLEV*		-0.0026	-1.64
Operational variables			
ΔTLCF	+	0.0138***	9.56
ΔFSFIRST	+	0.0810***	18.88
ΔDTL	+	0.1576***	3.90
$\Delta HEBT_{t-2}$	+	0.0021**	2.38
ΔEBT_{t+1}	+	0.0038***	4.78
Constant		-0.0088***	-2.65
Other control variables		Yes	
R-squared		0.4183	
Observations		40,058	
Firms		11,196	

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: This table reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *D_GEAR*, a dummy variable that takes on the value 1 when *LEV* is above the 75th percentile, 0 otherwise. The regression analysis was conducted for the full sample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 5. Discretionary factors interacting with high/low TLCF and FSFIRST

Dependent variable: Change in deferred tax assets (*ΔDTA*)			
	Expected sign	**Coefficient**	**t-statistics**
Panel A: Discretionary factors interacting with high/low TLCF			
Discretionary variables			
D_TLCF	?	-0.0009**	-2.25
P<HE_S	+	0.0002***	3.34
D_TLCF×P<HE_S	?	-0.0004	-1.09
P<HE_L	+	0.0008***	4.22
D_TLCF×P<HE_L	?	-0.0002	-0.21
P>HE_L	-	-0.0001	-1.53
D_TLCF×P>HE_L	?	-0.0005	-1.56
P<ZE_S	+	0.0019***	17.93
D_TLCF×P<ZE_S	**?**	**0.0019*** **	**6.36**
P<ZE_L	+	0.0064***	16.03
D_TLCF×P<ZE_L	**?**	**0.0012** **	**1.96**
P>ZE_L	-	-0.0003**	-2.00
D_TLCF×P>ZE_L	**?**	**-0.0019** **	**-2.28**
Δ*LEV*	+	0.0029***	4.66
D_TLCF×ΔLEV	?	0.0006	0.54
Constant		-0.0103***	-3.12
Operational and other control variables		Yes	
R-squared		0.4232	
Observations		40,058	
Firms		11,196	
Panel B: Discretionary factors interacting with high/low FSFIRST			
Discretionary variables			
D_FSFIRST	?	0.0003**	2.53
P<HE_S	+	0.0005***	5.17
*D_FSFIRST*P<HE_S*	?	-0.0001	-0.49
P<HE_L	+	0.0012***	5.83
*D_FSFIRST*P<HE_L*	?	-0.0001	-0.34
P>HE_L	-	-0.0003***	-3.19
*D_FSFIRST*P>HE_L*	?	0.0002	1.29
P<ZE_S	+	0.0017***	16.53
*D_FSFIRST*P<ZE_S*	?	0.0001	0.56
P<ZE_L	+	0.0057***	11.73
*D_FSFIRST*P<ZE_L*	?	0.0007	1.29
P>ZE_L	-	-0.0004**	-2.21
*D_FSFIRST*P>ZE_L*	?	-0.0001	-0.71
Δ*LEV*	+	0.0019**	2.02
*D_FSFIRST*ΔLEV*	?	0.0004	0.36
Constant		-0.0097***	-2.90

Operational and other control variables	Yes
R-squared	0.4231
Observations	40,058
Firms	11,196

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: Panel A of this table reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *D_TLCF*, a dummy variable that takes on the value 1 when the level of available TLCF at the beginning of the year is above the median, 0 otherwise. Panel B reports the estimation results for the general regression model outlined in section 4.2 with the discretionary variables interacting with *D_FSFIRST*, a dummy variable that takes on the value 1 when the level of available FSFIRST components at the beginning of the year is above the median, 0 otherwise. The regression analysis was conducted for the full sample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 6. Discretionary factors interacting with *POST_2010* and *CRISIS*

Dependent variable: Change in deferred tax assets (*ΔDTA*)			
	Expected sign	**Coefficient**	**t-statistics**
Panel A: Discretionary factors interacting with *POST_2010*			
Discretionary variables			
POST_2010	?	0.0001	1.33
P<HE_S	+	0.0004***	5.40
*POST_2010*P<HE_S*	?	0.0000	0.51
P<HE_L	+	0.0013***	7.56
*POST_2010*P<HE_L*	?	-0.0002	-0.48
P>HE_L	-	-0.0003***	-3.31
*POST_2010*P>HE_L*	?	0.0001	0.81
P<ZE_S	+	0.0016***	17.84
POST_2010*P<ZE_S	**?**	**0.0004*** **	**2.91**
P<ZE_L	+	0.0041***	12.90
POST_2010*P<ZE_L	**?**	**0.0013*** **	**2.63**
P>ZE_L	-	-0.0003*	-2.14
POST_2010*P>ZE_L	**?**	**-0.0004** **	**-2.23**
Δ*LEV*	+	0.0033***	5.08
*POST_2010*ΔLEV*	?	0.0006	0.48
Constant		-0.0105***	-2.76
Operational and other control variables		Yes	
R-squared		0.4221	
Observations		40,058	
Firms		11,196	
Panel B: Discretionary factors interacting with *CRISIS*			
Discretionary variables			
CRISIS	?	-0.0001	-0.93
P<HE_S	+	0.0013*	1.64
*CRISIS*P<HE_S*	?	0.0001	0.42
P<HE_L	+	0.0006***	2.69
*CRISIS*P<HE_L*	?	0.0006	1.49
P>HE_L	-	-0.0002**	-2.51
*CRISIS*P>HE_L*	?	-0.0000	-0.29
P<ZE_S	+	0.0023***	19.40
CRISIS*P<ZE_S	**?**	**-0.0007*** **	**-3.71**
P<ZE_L	+	0.0064***	17.86
CRISIS*P<ZE_L	**?**	**-0.0027*** **	**-4.12**
P>ZE_L	**-**	-0.0006***	-3.83
CRISIS*P>ZE_L	**?**	**0.0005*** **	**2.83**
Δ*LEV*	+	0.0033***	3.97
*CRISIS*ΔLEV*	?	-0.0003	-0.26
Constant		-0.0017**	-2.34

Operational and other control variables	Yes
R-squared	0.4216
Observations	40,058
Firms	11,196

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: Panel A of this table reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *POST_2010*, a dummy variable that takes on the value 1 for the years after 2010, 0 otherwise. Panel B reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *CRISIS*, a dummy variable that takes on the value 1 for the year 2008, 0 otherwise. The regression analysis was conducted for the full sample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 7. Discretionary factors interacting with *POST_2010* (under unexpected bad and good news)

Dependent variable: Change in deferred tax assets (ΔDTA)			
	Expected sign	**Coefficient**	**t-statistics**
Panel A: Subsample of firm-years affected by unexpected bad news (OCF ≤ 0)			
Discretionary variables			
POST_2010	?	0.0005**	2.25
P<HE_S	+	0.0003***	4.09
*POST_2010*P<HE_S*	?	0.0001	-0.73
P<HE_L	+	0.0015***	6.22
*POST_2010*P<HE_L*	?	-0.0003	-0.60
P>HE_L	-	-0.0002***	-1.42
*POST_2010*P>HE_L*	?	0.0001	0.68
P<ZE_S	+	0.0016***	14.41
POST_2010*P<ZE_S	**?**	**0.0003***	**1.61**
P<ZE_L	+	0.0049***	11.58
POST_2010*P<ZE_L	**?**	**0.0014****	**2.09**
P>ZE_L	-	0.0001	0.38
*POST_2010*P>ZE_L*	?	-0.0002	-0.76
ΔLEV	+	0.0033***	4.65
POST_2010*ΔLEV	**?**	**0.0006***	**1.79**
Constant		-0.0016*	-1.61
Operational and other control variables		Yes	
R-squared		0.6237	
Observations		19,888	
Firms		10,090	
Panel B: Subsample of firm-years not affected by unexpected bad news (OCF > 0)			
Discretionary variables			
POST_2010	?	0.0001	-0.09
P<HE_S	+	0.0005***	4.47
*POST_2010*P<HE_S*	?	0.0003	1.46
P<HE_L	+	0.0012***	4.93
*POST_2010*P<HE_L*	?	-0.0001	-0.19
P>HE_L	-	0.0003***	-2.78
*POST_2010*P>HE_L*	?	0.0001	0.63
P<ZE_S	+	0.0015***	11.40
POST_2010*P<ZE_S	**?**	**0.0005*****	**2.41**
P<ZE_L	+	0.0028***	5.98
POST_2010*P<ZE_L	**?**	**0.0015****	**2.06**
P>ZE_L	-	-0.0007***	-2.85
*POST_2010*P>ZE_L*	?	-0.0001	-0.31
ΔLEV	+	0.0034***	3.99
*POST_2010*ΔLEV*	?	0.0007	0.44

Constant	-0.0019**	-2.02
Operational and other control variables	Yes	
R-squared	0.6055	
Observations	20,179	
Firms	10,110	

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: Panel A of this table reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *POST_2010* (a dummy variable that takes on the value 1 for the years after 2010, 0 otherwise) for the subsample of firm-years affected by unexpected bad news (OCF ≤ 0). Panel B reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *POST_2010* (a dummy variable that takes on the value 1 for the years after 2010, 0 otherwise) for the subsample of firm-years not affected by unexpected bad news (> 0). The regression analysis was conducted for each subsample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 8. Discretionary factors interacting with *Big4*

Dependent variable: Change in deferred tax assets (*ΔDTA*)			
	Expected sign	**Coefficient**	**t-statistics**
Discretionary variables			
P<HE_S	+	0.0002**	2.15
*Big4*P<HE_S*	?	-0.0003	-1.15
P<HE_L	+	0.0005**	2.47
*Big4*P<HE_L*	?	0.0002	0.41
P>HE_L	-	-0.0002***	-2.67
*Big4*P>HE_L*	?	-0.0001	-0.21
P<ZE_S	+	0.0022***	19.16
*Big4*P<ZE_S*	?	0.0001	0.14
P<ZE_L	+	0.0064***	17.04
*Big4*P<ZE_L*	?	-0.0012	-1.22
P>ZE_L	-	-0.0002	-1.52
Big4*P>ZE_L	**?**	**-0.0011*** **	**-2.94**
Δ*LEV*	+	0.0011***	2.90
*Big4*ΔLEV*	?	0.0008	0.43
Constant		-0.0096	-2.87
Operational and other control variables		Yes	
R-squared		0.4217	
Observations		40,058	
Firms		11,196	

Note: This table reports the estimation results for the general regression model outlined in section 4.2, with the discretionary variables interacting with *Big4* (a dummy variable that takes on the value 1 when firms are audited by a Big 4 firm, 0 otherwise). The regression analysis was conducted for the full sample via fixed effects regression and is robust against heteroscedasticity and standard errors clustered at the firm level. Excluding *SIZE*, all accounting variables are divided by beginning total assets. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Table 9. Subsamples of suspect firm-years

Panel A: Descriptive statistics

	(1) Suspect firm-years just meeting/beating prior year earnings (n. 2,525)			**(2) Suspect firm-years just meeting/beating zero earnings (n. 6,193)**		
	Subsample	Rest of the sample	Difference in	Subsample	Rest of the sample	Difference in
	Mean	Mean	Means	Mean	Mean	Means
NE	0.013	0.026	0.013***	0.002	0.030	0.028***
EBD	0.012	0.025	0.013***	0.002	0.028	0.026***
DTA	0.006	0.009	0.003***	0.006	0.010	0.004***
DTL	0.006	0.005	-0.001	0.006	0.005	-0.001
LEV	0.723	0.662	-0.061***	0.751	0.651	-0.100***
BANK	0.276	0.211	-0.065***	0.305	0.198	-0.107***
TRADE	0.667	0.599	-0.067***	0.696	0.587	-0.109***
ΔDTA	0.001	0.001	0.000	0.000	0.001	0.001***
$DHE_{1\ year}$	0.000	0.005	0.005***	-0.002	-0.002	0.027
ΔLEV	-0.015	-0.016	-0.001	-0.015	-0.005	0.052
$\Delta TLCF$	-0.001	0.005	0.006***	-0.004	0.006	0.012***
$\Delta FSFIRST$	0.000	0.000	0	-0.001	0.000	0.001
ΔDTL	-0.000	-0.000	0	-0.000	-0.000	0.000
$\Delta HEBT_{t-2}$	-0.000	-0.000	0	-0.004	0.000	0.004***
ΔEBT_{t+1}	-0.004	-0.001	0.003	-0.005	-0.001	0.004***
$CETR_{3\ years}$	-0.619	-0.456	0.163***	-0.660	-0.432	0.228***
Big4	0.095	0	0.292	0.720	0	0.258
SIZE	16.984	17.009	0.025	16.881	17.003	0.149
GOV	5.266	4.372	0.716*	4.484	4.418	-0.065

Panel B: Main regression model applied to subsamples of suspect firm-years

Dependent variable: Change in deferred tax assets (ΔDTA)					
		(1) Suspect Firm-Years just Beating/Meeting prior earnings (n. 2,525)		**(2) Suspect Firm-Years just Beating/Meeting Zero earnings (n. 6,193)**	
	Expected sign	**Coefficient**	**t-statistics**	**Coefficient**	**t-statistics**
Discretionary variables					
P<HE_S	+	0.0024***	21.25	0.0001	0.58
P<HE_L	+	0.0150***	7.28	0.0010	1.25
P>HE_L	-	-0.0043***	-7.32	-0.0011***	-3.34
P<ZE_S	+	0.0008***	3.81	0.0026***	11.28
P<ZE_L	+	0.0048**	2.45	0.0225***	3.02
P>ZE_L	-	0.0001	0.41	0.0018***	4.61
ΔLEV	+	0.0013	0.87	0.0026*	1.83
Operational variables					
$\Delta TLCF$	+	0.0033	1.17	0.0043	1.14
$\Delta FSFIRST$	+	0.0346***	2.82	0.0201*	1.80
ΔDTL	+	0.6608***	8.67	0.7307***	7.11
$\Delta HEBT_{t-2}$	+	0.0003	0.18	-0.0037	1.10

ΔEBT_{t+1}	+	0.0002	0.10	0.0069**	2.54
Constant	?	-0.0016	-2.29	-0.0121	-2.29
Other control variables		Yes		Yes	
R-squared		0.6203		0.6247	
Observations		2,525		6,193	
Firms		2,100		3,835	

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed).

Note: Column 1 (Column 2) of Panel A compares each variable's mean of the subsample of suspect firm-years with reported change in NE (current NE) over beginning total assets between 0 and 0.002 (0 and 0.005) and the corresponding variable's mean for the rest of the sample. The level of statistical significance is from *t*-tests for the difference in means. Column 1 (Column 2) of Panel B reports the estimation results for the one-stage regression model outlined in section 4.2 when it is applied to the subsample of suspect firm-years with reported change in NE (current NE) over beginning total assets between 0 and 0.002 (0 and 0.005). The regression analysis was conducted for each subsample via fixed effects and is robust against heteroscedasticity and standard errors clustered at the firm level. All accounting variables were Winsorised at the 1% and 99% percentiles. The data were selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

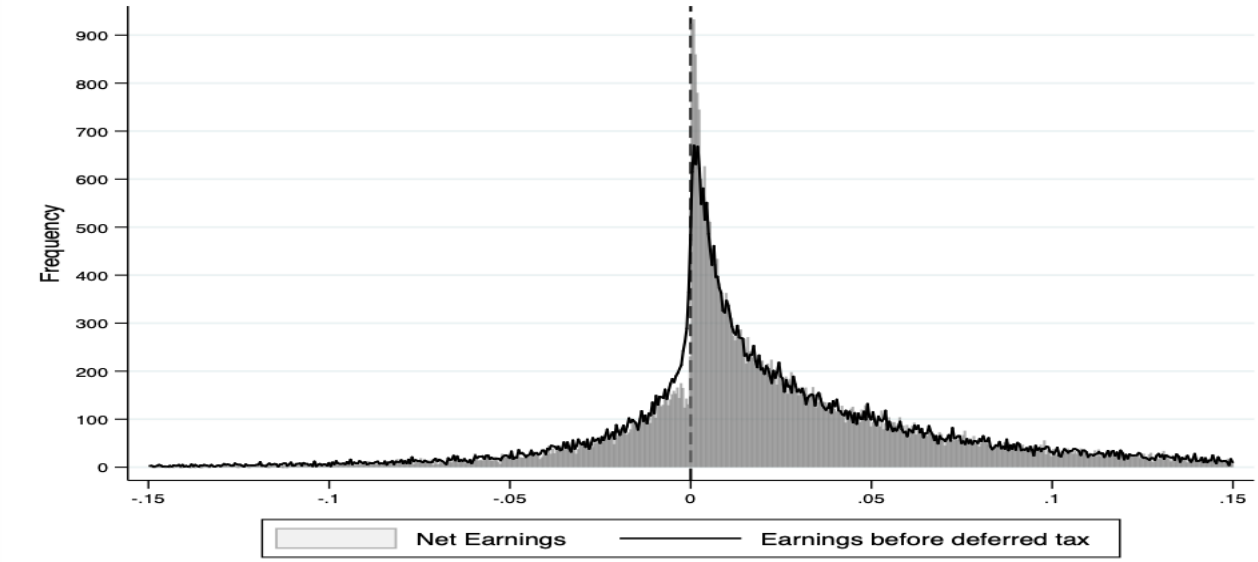
Table 10. Alternative model

Dependent variable: Change in deferred tax assets (*ΔDTA*)					
		One-side earnings management		**Two-side earnings management**	
	Expected sign	**Coefficient**	**t-statistics**	**Coefficient**	**t-statistics**
Discretionary variables					
$DHE_{3\ years}$	-	-0.0163***	-13.94		
$ABOVE\_HE_{3\ years}$	-			-0.0041***	-2.60
$BELOW\_HE_{3\ years}$	-			-0.0340***	-18.14
ΔLEV	+	0.0038***	6.57		
ABOVE_LEV	+			0.0036***	2.69
BELOW_LEV	+			0.0032***	4.55
Constant		-0.0012*	-1.65	-0.0016**	-2.21
Operational variables					
ΔTLCF	+	0.0184***	14.28	0.0151***	11.76
ΔFSFIRST	+	0.0792***	19.57	0.0770***	19.06
ΔDTL	+	0.1216***	3.75	0.1596***	4.92
$\Delta HEBT_{t-2}$	+	0.0046***	5.83	0.0040***	5.94
ΔEBTt+1	+	0.0042***	6.27	0.0047***	6.08
Other control variables		Yes			
R-squared		0.4001		0.4059	
Observations		40,058		40,058	
Firms		11.196		11.196	

* significant at 10%; ** significant at 5%; *** significant at 1% (two-tailed)

Note: This table reports the estimation results for the one-stage regression according to the alternative model described via equation (2a) and equation (2b). The regression analysis was conducted for the full sample via fixed effects and is robust against heteroscedasticity and standard errors clustered at the firm level. The sample was selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.

Figure 1. Distributions of net earnings (NE) and earnings before deferred taxes (EBD).



Note: Comparison of the empirical distributions of net earnings (shaded) and earnings before deferred taxes (line). The shaded area is the distribution of annual net earnings scaled by beginning total assets. The solid line is the distribution of annual earnings before deferred taxes scaled by beginning total assets. The dashed line marks the location of zero on the horizontal axis. The sample has been selected from the database AIDA, managed by Bureau Van Dijk, for the period 2006–2013. See Appendix 1 for variable definitions.