

**Do limited liability and full-liability firms have different motives for accounting conservatism? –
Evidence from European private firms**

Abstract

In contrast to the owners of corporations, the owners of sole proprietorships and partnerships are fully liable for the firm's liabilities, mitigating agency problems of debt. We predict that there is lower demand among creditors for accounting conservatism with full-liability firms, and we indeed find that they recognize losses considerably less timely than limited liability firms. We also demonstrate that in countries with tax-book conformity, full-liability firms recognize losses significantly earlier and gains in a less timely manner than in the absence of tax-book conformity. These tax-related patterns are not observed in limited liability firms. Full-liability firms' accounting conservatism also responds commensurately to increases in the corporate income-tax rate. Qualitative results remain when we employ propensity score matching and a difference-in-differences design, and when we account for endogenous choice of legal form. Overall, our results suggest that limited liability firms employ accounting conservatism due to agency problems of debt, while full-liability firms use it for tax management.

Keywords: Owner liability, private firms, cross-country study, accounting conservatism, tax-book conformity

JEL: M41, G32, G35, K34

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1 Introduction

Even though there is a growing body of research on private firms' financial reporting choices (e.g. Ball & Shivakumar, 2005; Bar-Yosef, D'Augusta, & Prencipe, 2019; Bernard, Burgstahler, & Kaya, 2018; Bonacchi, Marra, & Zarowin, 2019; Burgstahler, Hail, & Leuz, 2006; Hope, Thomas, & Vyas, 2017), there is virtually no evidence on the financial reporting of *full*-liability firms – that is, firms where individual owners are fully liable for the firm's liabilities, such as sole proprietorships and partnerships. Full-liability firms are economically important; they account for the majority of firms in many economies (53% in the USA (Mach & Wolken, 2006); 62% in the European Union (Eurostat, 2017)). Corporate finance theory predicts that owners' full liability will reduce agency problems of debt, since owners are more likely to bear the downside risk of poor decisions (Tirole, 2006). Consequently, we may expect a lower demand for financial covenants in debt contracting, and thus, also a lower demand for accounting conservatism (Christensen & Nikolaev, 2012; Watts, 2003). Accounting conservatism implies that losses are recognized timelier than gains which triggers an earlier violation of debt covenants, allowing lenders to take earlier decisions to limit their economic losses. In line with this reasoning, Bigus, Georgiou, and Schorn (2016) reported that full-liability firms exhibit lower accounting conservatism than limited liability firms. However, they used a German dataset, raising concerns about external validity.

We extend previous research by addressing two questions: (1) Do we find accounting conservatism to be associated with owner liability status in other countries as well? And (2): Does the taxation framework affect the relationship between owner liability status and accounting conservatism and if so, how? Bigus et al. (2016) did not address taxation motives. When financial accounts are used for tax purposes, the goal of limited liability firms to manage taxable income may interfere with their goal of meeting debt covenants (Burgstahler et al., 2006). Furthermore, full-liability firms may have a

motive for employing accounting conservatism: reducing current taxable income. Does tax-book conformity decrease the differences in accounting conservatism between the two legal forms?

We found ten European countries in which reporting is mandatory for sufficiently large full-liability firms (see online appendix). Full-liability and limited liability firms might exhibit different characteristics that actually cause differences in default risk and consequently, differences in (creditor) demand for timely loss recognition. We therefore use a propensity score matched sample of full-liability and limited liability firms, where the two groups have similar characteristics with respect to important default risk factors (size, leverage, volatility of sales, reported losses), industry- and year-fixed effects, and country affiliation.

First, we find strong evidence that full-liability firms exhibit significantly lower accounting conservatism than limited liability firms, by about 20-25%. Significant differences between the legal forms remain when we control for audit status and voluntary disclosure, and when we account for the endogenous choice of legal form and corporate law reforms. This evidence is in line with the conjecture that due to more pronounced agency problems of debt, limited liability firms employ more accounting conservatism.

Second, we document robust evidence that tax-book conformity moderates the relationship between full-liability status and accounting conservatism, mainly because full-liability firms tend to recognize losses earlier and to postpone gains. Full-liability firms' accounting conservatism also responds correspondingly to increases in the corporate income tax rate. Taken together, our results suggest that full-liability firms employ accounting conservatism mainly for tax reasons, whereas limited liability firms tend to use it for debt contracting.

Our study makes contributions to three strands of literature. First, we contribute to the scarce literature on full-liability firms' reporting choices (Bigus et al., 2016) by providing cross-country evidence for the conjecture that owners' full liability serves as a substitute for accounting conservatism in debt contracting. Prior literature on private firms' financial reporting choices has focused on limited liability firms, and has investigated aspects such as the role of voluntary audits (Allee & Yohn, 2009;

Hope, Thomas, & Vyas, 2011; Hope, Jiang, & Vyas, 2021; Kim, Simunic, Stein, & Yi, 2011; Minnis, 2011) and accrual-based accounting (Allee & Yohn, 2009; Cassar, Ittner, & Cavaluzzo, 2015) in the cost of private firms' debt; the drivers of producing audited GAAP financial statements (Lisowsky & Minnis, 2020); the determinants of private firms' earnings smoothing (Gassen & Fülbier, 2015); and the impact of changes in reporting regulation on bank lending among private firms (Breuer, Hombach, & Müller, 2018).

Second, we also contribute to the literature on the drivers of accounting conservatism (Ball, Robin, & Sadka, 2008; Deng, Li, Lobo, & Shao, 2018; Ho, Li, Tam, & Zhang, 2015; Qiang, 2007), where relatively little is known with regard to private firms' drivers (Ball & Shivakumar, 2005; Bigus et al., 2016; Cano-Rodriguez, 2010; Peek, Cuijpers, & Buijink, 2010). Prior literature has suggested that private firms' financial statements are indeed significantly influenced by taxation; however, research has not examined whether tax management differs between full-liability and limited liability firms (Burgstahler et al., 2006; Chen et al., 2011; Garrod et al., 2008; Hope et al., 2011; Kohlhase & Pierk, 2020; Kosi & Valentincic, 2013; Minnis & Shroff 2017). We add to this line of research by showing that private firms' accounting conservatism is indeed driven by tax motives, albeit in the case of full-liability firms rather than of limited liability firms.

Third, we contribute to the literature documenting cross-country studies on accounting conservatism and its drivers. For instance, Bushman and Piotroski (2006) investigated the roles of the legal system, securities laws, and the political economy. Ball et al. (2008) associated accounting conservatism with the development of debt and equity markets. Boulton, Smart, and Zutter (2017) showed that more accounting conservatism on the country level was associated with less IPO underpricing. Those studies all measured accounting conservatism among publicly listed firms. Peek et al. (2010) investigated private firms' accounting conservatism in Europe and its relationship to the country's level of creditor and investor protection. Gassen, Fülbier, and Sellhorn (2006) analyzed how accounting conservatism is related to other earnings attributes of private firms. None of those studies investigate full-liability firms' accounting conservatism and its drivers.

This paper is organized as follows. Section 2 develops the hypotheses. Section 3 describes the research design and the data selection. Section 4 presents the results of the regression analyses, and Section 5 provides several robustness tests. Section 6 concludes.

2 Hypothesis development

European private firms are primarily financed by loans from banks and other creditors (Cascino et al., 2014). Thus, agency problems of debt play a crucial role. In contrast, agency problems of equity are negligible with private firms, because there are usually only a few owners, and a single owner often runs the firm (Cascino et al., 2014; Minnis & Shroff, 2017).

Corporate finance theory predicts that owners' full liability would mitigate agency problems of debt in two ways (Tirole, 2006). First, full liability improves incentives in financial distress, because owners are more likely to bear the downside risk of poor decisions (Bhimani et al., 2014). Second, full liability can also be used as a costly signal: only high-quality borrowers will find it advantageous to set up full-liability firms, because their expected savings on interest expenses will outweigh the expected loss from the seizure of private assets. And in fact, full-liability firms are considerably less likely to default than private corporations (Bhimani et al., 2014; Harhoff, Stahl, & Woywode, 1998).

When agency problems of debt are present, borrowing firms are willing to agree to debt contracts that include covenants on dividend, financing, and investment decisions, as well as financial covenants based on financial accounting information (Armstrong, Guay, & Weber, 2010). The latter is used in debt contracts because it is standardized, verifiable, and recurrent (Cascino et al., 2014). Often, financial covenants require the borrowing firm to meet certain financial ratios (Christensen & Nikolaev, 2012; Smith & Warner, 1979).

As agency problems of debt become more severe, we expect limited liability firms to have a greater need for debt covenants than full-liability firms, and, consequently, a greater demand for accounting conservatism. From an *ex-ante* information perspective, this demand exists because creditors are more sensitive to the firm's economic losses than to its economic profits (Watts, 2003). Moreover,

accounting conservatism triggers an early *ex-post* violation of debt covenants, allowing lenders to more rapidly employ decision rights to limit their economic losses – such as by accelerating debt maturity and increasing collateral requirements. This in turn increases the efficiency of debt contracting (Wittenberg-Moerman, 2008).

However, we are unable to observe whether owners of limited liability firms actually provide collateral to compensate for limited liability, e.g., by personal guarantees. If so, the owners' liability setting might not be that different between the legal forms. We therefore posit Hypothesis 1 without direction:

Hypothesis 1: Limited liability and full-liability firms do not differ with regard to the level of accounting conservatism.

The tax framework is likely to frame financial reporting incentives (Chen et al., 2011; Garrod et al., 2008; Kosi & Valentincic, 2013), and, consequently, the association between full-liability status and accounting conservatism. We only consider private firms that are stand-alone entities (Bonacchi et al., 2019). Such firms only disclose unconsolidated financial statements. In countries where financial accounts are used to determine taxable income, we expect the goal of reducing net income and taxable income to interfere with the goal of meeting debt covenants (Burgstahler et al., 2006).

In addition, and possibly more importantly, tax-book conformity might induce full-liability firms to engage in more accounting conservatism, since recognizing losses timelier and gains with a delay reduces actual taxable income. Without tax-book conformity, full-liability firms have no real motive for (discretionary) accounting conservatism, while limited liability firms still have agency-related incentives. However, one might also argue that tax considerations provide similar marginal incentives to both legal forms such that the difference in accounting conservatism remains unchanged in the presence of tax-book conformity. We therefore posit Hypothesis 2 without direction:

Hypothesis 2: The association between full-liability status and accounting conservatism remains unchanged when tax-book conformity exists.

3 Data and research design

3.1 Research design

Following Ball and Shivakumar (2005), we measure private firms' accounting conservatism by the asymmetric persistence of net income:

$$(1) \quad \Delta NI_{i,t} = \hat{\partial}_0 + \hat{\partial}_1 D\Delta NI_{i,t-1} + \hat{\partial}_2 \Delta NI_{i,t-1} + \hat{\partial}_3 D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} + \hat{\partial}_4 FULL_i \\ + \hat{\partial}_5 FULL_i * D\Delta NI_{i,t-1} + \hat{\partial}_6 FULL_i * \Delta NI_{i,t-1} + \hat{\partial}_7 FULL_i * D\Delta NI_{i,t-1} * \Delta NI_{i,t-1} \\ + \hat{\partial}_8 D\Delta S_{i,t} + \hat{\partial}_9 \Delta S_{i,t} + \hat{\partial}_{10} D\Delta S_{i,t} * \Delta S_{i,t} + \varepsilon_{i,t}$$

$\Delta NI_{i,t}$ is the change in net income of firm i from fiscal year $t-1$ to t , scaled by the beginning book value of total assets. $D\Delta NI_{i,t}$ is an indicator variable that takes the value of 1 if the change in net income is negative, and zero otherwise. Following Banker, Basu, Byzalov, and Chen (2016), we account for cost stickiness, that is, for a change in sales ($\Delta S_{i,t}$) and whether that change in sales is negative or not ($D\Delta S_{i,t}$). $FULL$ is a binary variable with the value of 0 if the firm is a limited liability firm, and the value of 1 if at least one individual owner can be held liable with their private assets. This includes sole proprietorships and partnerships.

With regard to Hypothesis 2, we include interactions with an indicator variable on tax-book conformity, which is sometimes multiplied by the country's corporate income tax rate.

3.2 Data selection

European Union countries require private firms to disclose their financial reports when they are sufficiently large (European Union, 2015). We identify partnerships and sole proprietorships in the countries' respective legal form as full-liability firms (see online appendix).¹ Various databases from Bureau van Dijk provide information on the legal form in the following items: legal form (AIDA), national legal form (AMADEUS), current legal form (DAFNE), national legal form (ODIN), detailed legal form (SABI).

AMADEUS provides only very limited financial accounting information on full-liability firms, with the exception of Belgium and France; therefore, we also accessed the following national databases: FAME (United Kingdom and Ireland); AIDA (Italy); DAFNE (Germany); ODIN (Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway); and SABI (Portugal, Spain).

We had to exclude private firms from Ireland and the United Kingdom, since accrual accounting is not generally mandatory for them. We also excluded observations from Iceland, Lithuania, and Portugal, since we only found two (zero, zero, respectively) full-liability firms that met our financial accounting information requirements.

With each database, we took the longest time series of data available at the time of investigation, given that the necessary information on variables is fully provided. We consider only non-financial firms. Since limited liability firms are usually larger than sole proprietorships and partnerships, and the national databases contained vastly more data points on limited liability firms (a ratio higher than 99:1 on average, see Table 1), we decided to use propensity score matching.

-- Insert Table 1 about here --

We therefore created a sample of firms with different treatment regarding legal form, but with similar default risk properties. The matching criteria were the debt ratio, sales volatility, size as measured by total assets, the incidence of reported losses, industry, year, and country affiliation. We used nearest neighbor matching within a caliper and with replacement, following Bharath, Dahiya, Saunders, and Srinivasan (2011), Heckman, Ichimura, and Todd (1997, 1998), and Hope, Jiang, and Vyas (2013). In order to ensure sufficient statistical power, we matched one full-liability firm to nine limited liability firms.² We set a caliper size of $\epsilon < 0.1$ (Rosenbaum & Rubin, 1985); however, the matching results are very similar with $\epsilon < 0.01$. After matching, the variables' mean values of treated and non-treated firms do not differ significantly; the standardized mean bias is approximately or less than 5% (Rosenbaum & Rubin, 1985) in most countries, except for Denmark (not tabulated). All qualitative results remain the same when we ignore Danish firms.

Furthermore, we obtained data on tax-book conformity from PwC (2014, 2016) and data on corporate income tax rates from the OECD.³

4 Main results

4.1 Summary statistics

Table 2 shows that after matching, approximately 12% of all observations relate to full-liability firms (88% to limited liability firms).

-- Insert Table 2 about here --

Sample firms are very small; they are heavily reliant on debt financing, and they have only a few owners, rendering agency problems of equity negligible. The median full (limited) liability firm has total assets of €535,000 (€520,000), with an average debt ratio of about 57.5%. Almost 97% of the sample firms have total assets of less than €20 million. Thus, we have a sample of rather small than medium-sized entities (European Union, 2015).

Financial accounts are used to determine taxable income (TAX_BOOK) in 74% of our observations. The average profit tax rate amounts to 20.5%; the average corporate tax rate and combined tax rate are 27.5% and 31.3%, respectively.

4.2 Accounting conservatism with full-liability and limited liability firms in the absence of tax-book conformity

Timely gain recognition implies a “transitory” increase in net income that tends to reverse, implying $\partial_2 < 0$ (Ball & Shivakumar, 2005). Accounting conservatism implies that economic losses are recognized in a timelier manner than economic gains, such that a transitory decrease in net income is more likely to be reversed: $\partial_2 + \partial_3 < 0$ with $\partial_3 < 0$.

The coefficient ∂_3 reflects timely loss recognition with limited liability firms; we expect $\partial_3 < 0$. The coefficient ∂_7 represents the incremental effect of full-liability firms on timely loss recognition. If accounting conservatism is less important to full-liability firms, ∂_7 will be positive.

Table 3 shows the results with regard to Hypothesis 1. Columns 1 to 3 indicate that qualitative results are robust regarding the inclusion of interacted industry-, year-, and country-fixed effects. Column 3 shows that 14.4% (∂_2) of limited liability firms' net income increases and 43.6% ($\partial_2 + \partial_3$) of their net income decreases are transitory. This implies that limited liability firms recognize economic losses in a timelier manner than they recognize economic gains. With full-liability firms, 15.5% ($\partial_2 + \partial_6$) of net income increases and 34.3% ($\partial_2 + \partial_3 + \partial_6 + \partial_7$) of net income decreases are transitory. Even though banks may actually ask for personal guarantees from the owners of limited liability firms (Donelson et al., 2017), full-liability firms are about 20-25% less likely to recognize losses in a timely manner.

-- Insert Table 3 about here --

Columns 4 and 5 indicate that the differences in accounting conservatism are driven by audited financial statements. Since audits improve the information value of a covenant violation, the marginal benefits of debt covenants increase. Since there is more demand for debt covenants in the case of limited liability firms, the difference in timely loss recognition increases.

Column 6 in Table 3 shows that the results are stronger for the subsample limited to financially sound firms, which we define to have a return on assets exceeding the median (2.2%) and with a leverage level lower than the third quartile (80%). Garcia Lara et al. (2009) and Bigus et al. (2016) found evidence that financially distressed private firms in the UK and in Germany, respectively, decreased their accounting conservatism substantially. Financial distress may encourage firms to recognize gains earlier and losses later, especially in the case of limited liability firms. Consequently, the coefficient ∂_7 , which indicates the difference in timely loss recognition between these legal forms, amounts to 0.104 with the full sample, but 0.215 in the subsample of financially sound firms, with the p -value

falling from 1.2% to 0.1%. Adjusted R^2 also increases in the case of financially sound firms, despite the smaller sample size (30.5% versus 21.1% in the full sample).

Column 7 shows that we obtain similar qualitative results when we restrict our sample to firms that are subject to mandatory disclosure according to information from the European Union (2011); for more detailed country-level information, see the online appendix. We also ran a regression for firms subject to mandatory accrual accounting; the qualitative results did not change (not tabulated).

4.3 Full-liability status and accounting conservatism: The impact of the taxation framework

Table 4 depicts the results for the marginal effect of tax-book conformity for the full sample as well as for the subsample of financially sound firms.

--Insert Table 4 about here--

In the absence of tax-book conformity, full-liability firms exhibit significantly lower levels of accounting conservatism than limited liability firms (see $\hat{\delta}_7$). With tax-book conformity, however, the differences in accounting conservatism between the legal forms basically disappear, mainly because full-liability firms increase their conservatism significantly (see $\hat{\delta}_{18}$). The result is robust whether we employ tax-book conformity alone (TAX_BOOK, Column 1), or if we take into account the corporate income tax rate, regardless of whether we use the original tax rate or its ranked form (Columns 2-4). We assume that corporate income tax rates also matter for full-liability firms. One might object that in some countries, full-liability firms are taxed according to the owners' marginal personal income tax rates, which we are unable to observe. However, *on average*, personal income tax rates are likely to be related to the corporate income tax rates of limited liability firms. If average personal income tax rates were much higher (lower) than corporate tax rates, there would be a major incentive to establish limited liability firms (full-liability firms, respectively) and a rather unlevel playing field between the legal forms (Goolsbee, 2004; Lejour & Massenz, 2021).

When we look at financially sound firms, the results are even more pronounced, both economically and statistically (see Columns 6-10 in Table 4). The coefficients for full-liability firms' marginal timely loss recognition are about twice as high than in the full sample. However, only full-liability firms substantially increase accounting conservatism in the presence of tax-book conformity and/or higher income tax rates. Notably, Columns 7-10 suggest that full-liability firms also significantly delay *gains* (coefficient $\hat{\delta}_{17}$) when there is tax-book conformity. The results are also robust when we employ 1:1 instead of 1:9 propensity score matching (Column 10).

5 Robustness test and additional analyses

5.1 Endogeneity analyses: Heckman procedure

We modeled the possibly endogenous choice of legal form by conducting a Heckman procedure (Lennox, Francis, & Wang, 2012). The first regression estimates the probability of establishing a full-liability firm. By adding the inverse Mills ratio and its interactions to the second regression, it is possible to control for possible selection bias.

In order to obtain unbiased estimates for the selection effect, we need an exogenous variable that is associated with the choice of legal form, but is unlikely to be related to the *firms'* accounting choices. The New Institutionalism approach in organization theory suggests that firms' decisions are driven by rational and effective peer firms that are considered to be, and therefore serve as, role models (Tempel & Walgenbach, 2007). Czarniawska (2005) highlighted trends in organization which, similar to the New Institutionalism approach, resulted in the adaptation of peer firms' practices, and eventually in the convergence of organizational practices. We may expect similar tendencies with private firms, especially when local lawyers provide similar advice to several firms. In light of organization theory, we therefore infer that the *regional* propensity for certain legal forms may affect the owners' choice of legal form, but is unlikely to be related to the *individual firms'* accounting choices. We therefore think that the regional propensity for certain legal forms meets the exclusion restriction.

In the first stage, we model the choice of legal form and employ the variable `RATIO_FULL`, calculated as the ratio $\frac{\text{full-liability firms in region}}{\text{limited liability firms in region}}$ for each region of a country before propensity score matching. In order to identify these regions, we employed geographical data from Eurostat (known as the NUTS system).⁴ We defined 6 to 27 regions per country, and assigned firms to certain regions. The mean value of `RATIO_FULL` is 0.0211. We cannot rule out that the owners' risk attitudes and tax rates may affect the choice of legal form as well but we lack the respective data.

In the first stage, `RATIO_FULL` exhibits a positive sign ($p < 0.001\%$); see Columns 1 and 7 in Table 5. In the second stage, the coefficients for the interacted inverse Mills ratio are not significant with financially sound firms, and slightly significant with the full sample; this indicates no or limited endogeneity of liability status. The coefficient $\hat{\partial}_7$ is highly significant, confirming that limited liability firms exhibit higher levels of accounting conservatism. The moderate variance inflation factors of the inverse Mills ratio and of the `FULL` variable indicate low levels of multicollinearity, suggesting that the model is not specified incorrectly (Lennox et al., 2012).

-- Insert Table 5 about here --

With regard to Hypothesis 2, the endogeneity-adjusted results confirm our main findings (Columns 3-6 and 9-12). In the absence of tax-book conformity, full-liability firms exhibit less accounting conservatism than limited liability firms. However, with tax-book conformity, full-liability firms significantly increase timely loss recognition ($\hat{\partial}_{18}$), while limited liability firms generally do not ($\hat{\partial}_{13}$). Again, results are stronger in the subsample of financially sound firms. In that subsample, full-liability firms also tend to delay gains for tax reasons ($\hat{\partial}_{17}$). The results remain robust regardless of whether we use the original tax rate or its ranked form.

5.2 Change in corporate law and in corporate income tax rates

With regard to Hypothesis 1, we address possible endogeneity concerns by considering corporate law reforms that supposedly affected limited liability firms, but not full-liability firms. Stricter minimum

capital requirements are likely to decrease the perceived default risk of limited liability firms, leaving full-liability firms unaffected. More paid-in capital tends to increase corporate net assets, and may also signal low default risk more credibly. The opposite reasoning holds when capital requirements become more lenient. Using the World Bank's "Doing Business" database and findings by Armour (2016), we verified whether there were major decreases or increases in capital requirements of 20% or more in the sample countries during the period of investigation. After defining all variables and using propensity score matching,⁵ we were left with reductions in minimum capital requirements in Italy and in Norway (Armour, 2016). Before 2012, Italian limited liability firms (s.r.l.) needed to have a minimum paid-in capital of €10,000; since August 2012, this requirement has been lowered to €1. In Norway, the minimum capital requirement changed from 100,000 Norwegian kroner in 2012 (approx. €12,853; nominal figure) to 30,000 kroner in 2013 (approx. €3,856; nominal figure).

-- Insert Table 6 about here --

Table 6 shows that limited liability firms' timely loss recognition indeed increased after minimum capital requirements became more lenient (see ∂_{14} in Columns 1 and 2). Column 1 shows that 24.5% ($\partial_2 + \partial_3$) of limited liability firms' net income decreases were transitory before the change in corporate law, while it increased to 42.3% ($\partial_2 + \partial_3 + \partial_{13} + \partial_{14}$) thereafter. In the subsample of financially sound firms, limited liability firms also significantly decreased timely gain recognition (see ∂_{13} in Column 2). These findings support the idea that demand for debt covenants and for accounting conservatism would increase in the case of lower minimum capital requirements. In line with our expectations, full-liability firms' accounting conservatism was not materially affected by the change in corporate law.

Regarding Hypothesis 2, Table 7 shows the results of how firms' accounting conservatism changed after an increase in corporate income tax rates. With financially sound firms, we find that full-liability firms engage significantly more frequently in timely loss recognition, but tend to delay the recognition of gains. With limited liability firms, we do not observe a robust tax-induced change in accounting conservatism. We obtain this result regardless of whether we match full-liability and limited liability

firms by the ratio of 1:9 or 1:1. For the full sample, the respective coefficients exhibit the same signs, but are not significant at conventional levels.

--Insert Table 7 about here--

5.3 Additional analyses

In order to further test Hypothesis 1, we defined a variable called TANGIBLE, which reflects potential collateral, and equals the sum of tangible fixed assets and accounts receivable divided by lagged total assets. It transpires that the difference in timely loss recognition between the legal forms becomes smaller when limited liability firms have more collateral (not tabulated). This is in line with the assumption that collateral and timely loss recognition are substitutes for each other in mitigating agency problems of debt.

When we employ entropy balancing (Hainmueller, 2012; Hope et al., 2021), or when we exclude firms from Italy (the country that provided us with the most observations), we obtain the same qualitative results (not tabulated).

6 Summary

This paper reports robust cross-country evidence that firms with full owner liability, such as sole proprietorships and partnerships, exhibit significantly less timely loss recognition than limited liability firms. Since agency problems of debt are less severe with full-liability firms, we expect a lower demand for debt covenants and accounting conservatism.

Second, we find that in countries with tax-book conformity, full-liability firms engage considerably more frequently in timely loss recognition as well as (to a certain extent) in delaying gains, simply in an effort to reduce current taxable income. In line with this, when tax rates increase, full-liability firms exhibit more accounting conservatism. Limited liability firms, however, do not tend to alter their practices regarding accounting conservatism in countries with tax-book conformity or when tax rates

increase. Overall, our results suggest that limited liability firms employ accounting conservatism due to agency problems of debt, whereas full-liability firms use it to reduce tax payments.

This study makes a general statement that private firms are diverse, and this may have consequences for financial reporting decisions. There are also various limitations that should be addressed by future research. We have ten countries with observations on full-liability firms; this limits the external validity of our results. Furthermore, we have no access to credit file data on private firms, which would allow us to link accounting conservatism more directly to debt covenants and to investigate the role of owners' guarantees. As we argued above, we expect results to be even stronger when controlling for owners' guarantees. Finally, we lack owners' individual income tax data and are therefore only able to capture tax incentives to a limited extent.

Appendix

TABLE A1: Definitions of variables

Variables (sources: AIDA, AMADEUS, DAFNE, ODIN, SABI, all Bureau van Dijk)	
ΔNI	$\Delta NI_{i,t}$ is the change in net income of firm i from fiscal year $t-1$ to t , scaled by the beginning book value of total assets.
$D\Delta NI$	Dummy variable: 1 if the change in net income is negative, and 0 otherwise.
FULL	Dummy variable: 1 if partnership or sole proprietorship, and 0 if limited liability firm.
ΔS	$\Delta S_{i,t}$ is change in sales of firm i from fiscal year $t-1$ to t , scaled by the beginning book value of total assets.
$D\Delta S$	Dummy variable: 1 if the change in sales is negative, and 0 otherwise.
AUDIT	Dummy variable: 1 if financial statement is audited, and 0 otherwise. We assume no audit in the absence of an auditor name (AIDA, ODIN, AMADEUS, SABI, and DAFNE). We interpret missing information on auditors or on audited accounts as there being no audit.
RATIO_FULL	Ratio of full-liability firms to limited liability firms, $\frac{\text{full-liability firms in region}}{\text{limited liability firms in region}}$ for each region of a country before propensity score matching. In order to identify regions, we employed geographical data from Eurostat (called NUTS, Nomenclature of territorial units for statistics) where the provinces and regions are linked to postal codes. We defined 6 to 27 regions per country, and assigned almost all firms to particular regions.
Matching variables (sources: AIDA, AMADEUS, DAFNE, ODIN, SABI, all Bureau van Dijk)	
SIZE	Ln (total assets in €1,000), averaged over three years.
DEBT	Ratio of total liabilities to total assets, averaged over three years.
RISKSALES	Ratio of the absolute value of $(\text{sales}_t - \text{sales}_{t-1} / \max(\text{sales}_t, \text{sales}_{t-1}))$, averaged over three years.
LOSS	Dummy variable: 1 if there was a loss at t or the two preceding years, and 0 otherwise.
Institutional variables (sources: PwC 2014, 2016, OECD Tax database, <i>Doing Business</i> database of the World Bank 2020)	
TAX_BOOK	Dummy variable: 1 if financial statements are used for measuring taxable income in the country (tax-book conformity, TAX_BOOK), and 0 if not (PwC 2014, 2016).
TAXRATE	Corporate income tax rate, reflecting the basic central government statutory (flat or top marginal) corporate income tax rate. See https://stats.oecd.org/index.aspx?DataSetCode=Table_III .
COMB_TAXRATE	Combined corporate income tax rate reflecting the basic combined central and sub-central (statutory) corporate income tax rate given by the central government rate (less deductions for sub-national taxes) plus the sub-central rate. See https://stats.oecd.org/index.aspx?DataSetCode=Table_III .
PR_TAXRATE	The profit tax rate measures the amount of income taxes borne by the business in the second year of operation, expressed as a share of commercial profit. (See the <i>Doing Business</i> database of the World Bank 2020, Column DS, www.doingbusiness.org).
INCR_TAXR	Dummy variable: 1 if there was an increase in COMB_TAXRATE, and 0 if there was no change.

All metric variables have been winsorized at the 1% and 99% percentiles.

TABLE A2: Institutional variables

Variable	Source	Belgium	Denmark	Estonia	Finland	France	Germany	Italy	Latvia	Norway	Spain
		B	DK	ES	FI	F	D	I	LV	N	E
Panel A: Time-invariant variables											
TAX_BOOK	PwC (2014, 2016)	1	0	0	1	1	0*	1	1	0	1
Panel B: Combined corporate income tax rates in %, in countries with tax-book conformity											
2006	OECD, Dataset: Table II.1, Statutory corporate income tax rate	35.97				34.43					35
2007		33.99				34.43		37.25			32.5
2008		33.99				34.43		31.4			30
2009		33.99			26	34.43	29.37	31.4	15		30
2010		33.99			26	34.43		31.4	15		30
2011		33.99			26	36.1		31.4	15		30
2012		33.99			24.5	36.1		31.29	15		30
2013		33.99			24.5	38		31.29	15		30
2014					20			31.29	15		30
2015					20						28
2016											25

*Tax-book conformity in Germany equals 0 from 2010 onwards, and 1 otherwise. The time series of tax rate data starts with the third year for which we have observations, since equation (1) requires net income from t and $t-1$, each standardized by lagged total assets. For a definition of the variables, see Table A1. For the dataset of statutory corporate income tax rates, see: https://stats.oecd.org/index.aspx?DataSetCode=Table_III.

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Table 1: Sample selection

	Legal form	Belgium	Denmark	Estonia	Finland	France	Germany	Italy	Latvia	Norway	Spain	Total
Source		AMADEUS	ODIN	ODIN	ODIN	AMADEUS:	DAFNE	AIDA	ODIN	ODIN	SABI	
Time frame		2004-13	2007-15	2007-15	2007-15	2004-13	2007-15	2005-14	2007-15	2007-15	2004-16	
Firm-years, including total assets, current assets, current liabilities, depreciation, net income, deletion of consolidated statements	FULL=0	385,800	436,158	245,322	660,775	996,530	191,565	431,619	11,130	843,868	736,856	4,939,623
	FULL=1	710	22,890	2,392	1,214	4,847	907	14,001	3,859	22,073	908	73,801
	Total	386,510	459,048	247,714	661,989	1,001,377	192,472	445,620	14,989	865,941	737,764	5,013,424
Firm-years after the deletion of implausible values and missing values for operating risk, size, and debt	FULL=0	280,713	307,277	217,023	556,340	954,694	181,397	332,776	9,870	584,861	609,209	4,025,277
	FULL=1	402	5,277	2,064	794	4,535	744	11,047	3,523	12,555	731	41,672
	Total	281,115	312,554	219,087	557,134	959,229	182,141	343,823	13,393	597,416	609,940	4,066,949
Firm-years meeting the three-year series of data requirement according to equation (1), before PSM	FULL=0	149,734	50,662	88,788	211,115	491,642	37,882	191,629	1,916	276,058	394,709	1,894,135
	FULL=1	187	553	296	126	1,668	150	5,484	171	2,480	304	11,459
	Total	149,921	51,215	89,084	211,241	493,310	38,032	197,113	2,087	278,538	395,013	1,905,594
Firm-years, after PSM	FULL=0	449	357	2,446	1,080	12,706	1,058	37,582	790	15,950	2,641	75,059
	FULL=1	51	189	285	120	1,616	138	5,282	125	2,055	297	10,158
	Total	500	546	2,731	1,200	14,322	1,196	42,864	915	18,005	2,938	85,217

Table 1 shows the sample selection for each country. We excluded observations from the following industries: bank services, insurance, real estate, public administration, activities of households as employers, and activities of extraterritorial organizations and bodies. In Italy, there are 4.5 million limited liability firms. We randomly chose 10% of them to simplify the matching procedure. PSM stands for propensity score matching. The match is nine limited liability firms for each full-liability firm. Matching criteria are SIZE, DEBT, RISKSALLES, LOSS, industry, year and country affiliation. FULL is a dummy variable with a value of 1 if the firm is a full-liability firm (partnership or sole proprietorship), and with a value of 0 if it is a private limited liability firm.

Table 2: Summary statistics of propensity-score matched sample

Full-liability firms, N = 10,158					
Variables and characteristics	Mean	Standard deviation	25% quartile	Median	75% quartile
SIZE: ln(total assets in €1,000)	6.2823	1.8853	5.0370	5.9661	7.1839
SIZE: total assets in €1,000	535.02		154.01	389.98	1,318
DEBT	0.5762	0.2841	0.3556	0.6318	0.8194
RISKSALLES	0.2323	0.2210	0.0739	0.1663	0.3159
LOSS	0.2950		0	0	1
# OWNERS (N = 8,807)	2.2839	1.5018	2	2	2
AUDIT	0.2533	0.4349	0	0	1
TAX_BOOK	0.7396		0	1	1
TAXRATE	21.7247	13.3416	0.0000	27.5000	27.5000
COMB_TAXRATE	23.7793	14.3895	0.0000	31.2900	31.4000
PR_TAXRATE	14.8836	11.5230	0.0000	20.9000	23.2000
RATIO_FULL (N = 10,147)	0.0258	0.0396	0.0082	0.0161	0.0411
Private limited liability firms, N = 75,059					
Variable and characteristics	Mean	Standard deviation	25% quartile	Median	75% quartile
SIZE: ln(total assets in €1,000)	6.2544	1.6374	5.2040	6.1463	7.2167
SIZE: total assets in €1,000	520.30		182.00	466.99	1,361
DEBT	0.5742	0.2621	0.3709	0.6145	0.7965
RISKSALLES	0.2306	0.2171	0.0745	0.1667	0.3147
LOSS	0.2733		0	0	1
# OWNERS (N = 67,673)	2.4341	1.5472	2	2	3
AUDIT	0.2409	0.4276	0	0	0
TAX_BOOK	0.7384		0	1	1
TAXRATE	21.8076	13.4326	0.0000	27.5000	28.0000
COMB_TAXRATE	23.7907	14.4338	0.0000	31.2900	31.4000
PR_TAXRATE	14.6128	11.4870	0.0000	20.4000	23.2000
RATIO_FULL (N = 75,005)	0.0205	0.0389	0.0044	0.0105	0.0260

For a definition of the variables, see Table A1 in the appendix. To provide a more detailed picture of the private firms in our sample, Table 2 presents a few variables that are not used in the regression analyses, e.g., the matching variables SIZE, DEBT, RISKSALLES, LOSS and the variable #OWNERS. RATIO_FULL has fewer observations, as we were unable to assign postal codes for a few firms in Norway and France to particular regions.

Table 3: Hypothesis 1 on accounting conservatism (change in net income), pooled OLS after PSM

Pred. sign	$\Delta NI_{i,t}$ Coeff. (t-value)					$\Delta NI_{i,t}$ Coeff. (t-value)	
	Full sample					Financially sound firms	
	With industry FE (1)	With country FE (2)	With all FE (3)	AUDIT (4)	No AUDIT (5)	With all FE (6)	Mandatory disclosure only (7)
ΔNI_{t-1} (θ_2)	-0.168 (-3.24)	-0.204 (-13.21)	-0.144 (-2.43)	-0.157 (-3.77)	-0.226 (-6.86)	-0.129 (-3.56)	0.0493 (0.44)
$D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_3)	-0.302 (-2.69)	-0.179 (-6.63)	-0.292 (-2.35)	-0.234 (-3.16)	-0.270 (-4.85)	-0.474 (-7.08)	-0.834 (-5.04)
$FULL_{t-1} * \Delta NI_{t-1}$ (θ_6)	-0.0049 (-0.16)	0.0028 (0.09)	-0.0107 (-0.38)	-0.0391 (-0.87)	0.0009 (0.02)	-0.0027 (-0.08)	-0.154 (-2.18)
$FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_7)	0.107 (2.35)	0.0923 (2.01)	0.104 (2.34)	0.146 (2.01)	0.087 (1.58)	0.215 (3.58)	0.222 (1.82)
Cost stickiness (Banker et al. 2016)	Included	Included	Included	Included	Included	Included	Included
Interacted industry FE	Included	--	Included	Included	Included	Included	Included
Interacted year FE	--	--	Included	Included	Included	Included	Included
Interacted country FE	--	Included	Included	Included	Included	Included	Included
N =	85,217	85,217	85,217	21,251	63,959	37,218	4,488
Adj. R ² in %	20.3	20.7	21.1	19.4	22.0	30.5	25.8
F-Stat.	185.3	231.6	90.8	25.8	70.1	65.76	12.6

This table shows how full-liability firms' accounting conservatism differs from that of private limited liability firms, for the full sample (Columns 1-3), for subsamples of audited and non-audited financial statements (Columns 4-5), and for a subsample of financially sound firms (Columns 6-7), each after propensity score matching. Financially sound firms have a return on assets exceeding the median (2.2%) and leverage lower than the third quartile (0.80). t -statistics using a two-tailed test are reported in parentheses. Robust standard errors have been adjusted for heteroscedasticity and clustering at the firm level. FULL is a dummy with a value of 1 if the firm is a full-liability firm (partnership, sole proprietorship), and a value of 0 if it is a limited liability firm. $\Delta NI_{i,t}$ is the change in net income of firm i from fiscal year $t-1$ to t , scaled by the beginning book value of total assets. $D\Delta NI_{i,t}$ is an indicator variable taking a value of 1 if the change in net income was negative, and a value of 0 otherwise. Cost stickiness includes the variables $\Delta S_{i,t}$ (change in sales of firm i from fiscal year $t-1$ to t , scaled by the beginning book value of total assets) and $D\Delta S_{i,t}$ (indicator variable taking a value of 1 if the change in sales was negative, and a value of 0 otherwise). FE stands for fixed effects. For information on the regulations on mandatory disclosure, see online appendix.

Table 4: Hypothesis 2 on full-liability status, tax-book conformity, and accounting conservatism, pooled OLS after PSM

Pred. sign	$\Delta NI_{i,t}$ Coeff. (t-value) Full sample					$\Delta NI_{i,t}$ Coeff. (t-value) Financially sound firms				
	TAX_ BOOK	TAX_ BOOK * COMB_ TAXRATE	TAX_ BOOK * COMB_ TAXRATE, ranked	TAX_ BOOK * TAXRATE, ranked	TAX_ BOOK * COMB_ TAXRATE, ranked, PSM 1:1	TAX_ BOOK	TAX_ BOOK * COMB_ TAXRATE	TAX_ BOOK * COMB_ TAXRATE, ranked	TAX_ BOOK * TAXRATE, ranked	TAX_ BOOK * COMB_ TAXRATE, ranked, PSM 1:1
TAX =	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ΔNI_{t-1} (∂_2)	-0.110 (-0.60)	-0.133 (-0.73)	-0.211 (-5.12)	-0.232 (-4.38)	-0.159 (-1.93)	-0.037 (-0.14)	0.192 (0.80)	-0.0836 (-1.66)	-0.115 (-1.83)	-0.152 (-1.56)
$D\Delta NI_{t-1} * \Delta NI_{t-1}$ - (∂_3)	-0.480 (-1.47)	-0.864 (-2.79)	-0.239 (-3.49)	-0.119 (-1.36)	-0.338 (-2.53)	-0.413 (-1.11)	-1.066 (-2.93)	-0.459 (-5.02)	-0.287 (-2.43)	-0.608 (-3.49)
$FULL_{t-1} * \Delta NI_{t-1}$ (∂_6)	-0.0300 (-0.64)	-0.0176 (-0.38)	-0.0260 (-0.66)	-0.0347 (-0.92)	0.0292 (0.57)	-0.0420 (-0.94)	-0.0273 (-0.62)	-0.0391 (-0.98)	-0.0443 (-1.13)	-0.0394 (-0.73)
$FULL_{t-1} * D\Delta NI_{t-1}$ + (∂_7)	0.176 (2.38)	0.161 (2.22)	0.163 (2.64)	0.156 (2.60)	0.138 (1.67)	0.324 (3.94)	0.296 (3.65)	0.305 (4.18)	0.292 (4.03)	0.325 (2.98)
$TAX_{t-1} * \Delta NI_{t-1}$ (∂_{13})	0.0044 (0.35)	-0.0030 (-0.52)	-0.0432 (-0.51)	0.0148 (-0.37)	-0.220 (-1.13)	0.0107 (0.67)	-0.0104 (-1.39)	-0.143 (-1.39)	-0.0609 (-0.35)	-0.246 (-1.08)
$TAX_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_{14})	0.234 (0.72)	0.0196 (2.02)	-0.0297 (-0.22)	-0.410 (-1.75)	0.226 (0.77)	-0.0262 (-0.07)	0.0197 (2.01)	0.0162 (0.09)	-0.545 (-1.73)	0.127 (0.36)
$TAX_{t-1} * FULL_{t-1} * \Delta NI_{t-1}$ (∂_{17})	0.0001 (0.01)	0.0005 (0.32)	-0.0764 (-0.72)	0.133 (1.38)	-0.030 (-0.22)	-0.0070 (-0.66)	0.0032 (1.68)	0.284 (2.57)	0.317 (3.09)	0.227 (1.64)
$TAX_{t-1} * FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_{18})	-0.178 (-2.00)	-0.0048 (-1.75)	-0.340 (-2.09)	-0.303 (-1.98)	-0.286 (-1.29)	-0.426 (-3.63)	-0.0114 (-3.32)	-0.790 (-3.81)	-0.646 (-3.20)	-0.673 (-2.43)
Cost stickiness (Banker et al. 2016)	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Interacted industry-, year- and country-fixed effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N =	85,217	85,217	85,217	85,217	19,540	37,221	37,221	37,221	37,221	8,542
Adj. R ² in %	21.1	21.1	21.1	21.1	19.9	30.6	30.6	30.6	30.6	27.4
F-Stat.	85.4	85.5	85.3	85.5	22.24		61.2	61.1	61.1	16.44

Table 4 shows how accounting conservatism between full-liability firms and limited liability firms differs in countries with and without tax-book conformity (Columns 1, 6) and in light of different specifications of the corporate income tax rate (Columns 2-5 and 7-10). Columns 1-5 refer to the full sample, Columns 6-10 to the sample of financially sound

firms (defined in Table 3), each after propensity score matching. `TAX_BOOK` is a dummy variable equal to 1 if financial statements are used for measuring taxable income in the respective country, and 0 if not (PwC 2014, 2016). For a definition of the corporate income tax rate variables, see Table A1 in the appendix. In the ranked version, for each year, we assign a value of 1 to the observations with the highest tax rate and a value of 0 to the observation with the lowest tax rate. Ranks in between are translated in a linear fashion, e.g., when we have 1,000 observations, the 10th highest tax rate is assigned a value of $991/1,000 = 0.991$. All regressions adjust for cost stickiness according to Banker et al. (2016), that is, for scaled changes in sales from fiscal year $t-1$ to t , and for the sign of those changes in sales. t -statistics using a two-tailed test are reported in parentheses. Robust standard errors have been adjusted for heteroscedasticity and clustering at the firm level. For a description of $\Delta NI_{i,t}$, $D\Delta NI_{i,t}$ and `FULL`, see Table 3.

Table 5: Hypotheses 1 and 2 on accounting conservatism: Heckman correction (after PSM)

Pred. sign	$\Delta NI_{i,t}$						$\Delta NI_{i,t}$					
	FULL Coeff. (z-value, Probit)		Full sample				FULL Coeff. (z-value, Probit)		Financially sound firms			
TAX =	First stage, all firms	Without TAX interactions (Hyp. 1)	TAX_BOOK *COMB_TAXRATE (Hyp. 2)	TAX_BOOK *TAXRATE (Hyp. 2)	TAX_BOOK *PR_ TAXRATE (Hyp. 2)		First stage, Fin. sound firms	Without TAX interactions (Hyp. 1)	TAX_BOOK* COMB_TAXRATE (Hyp. 2)	TAX_BOOK *TAX_RATE (Hyp. 2)	TAX_BOOK *PR_ TAX_RATE (Hyp. 2)	
			ranked	not ranked	ranked	ranked			ranked	not ranked	ranked	ranked
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ΔNI_{t-1} (∂_2)		-0.0031 (-0.03)	0.0172 (0.14)	0.0962 (0.44)	-0.0038 (-0.03)	-0.0060 (-0.03)		-0.120 (-0.95)	-0.0566 (-0.42)	0.228 (1.04)	-0.102 (-0.73)	-0.0060 (-0.03)
$D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_3)	-	-0.700 (-2.91)	-0.658 (-2.68)	-1.291 (-3.31)	-0.528 (-2.10)	-0.394 (-1.36)		-0.818 (-2.48)	-0.751 (-2.26)	-1.407 (-2.83)	-0.548 (-1.62)	-0.639 (-1.73)
$FULL_{t-1} * \Delta NI_{t-1}$ (∂_6)		-0.0143 (-0.51)	-0.0266 (-0.68)	-0.0168 (-0.37)	-0.0357 (-0.95)	-0.0120 (-0.28)		-0.0137 (-0.43)	-0.0512 (-1.26)	-0.0399 (-0.89)	-0.0555 (-1.40)	-0.0357 (-0.84)
$FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_7)	+	0.125 (2.80)	0.187 (3.02)	0.187 (2.59)	0.180 (3.00)	0.189 (2.82)		0.233 (3.88)	0.322 (4.40)	0.314 (3.88)	0.308 (4.25)	0.334 (4.38)
$TAX_{t-1} * \Delta NI_{t-1}$ (∂_{12})			-0.0581 (-0.68)	-0.0032 (-0.56)	-0.0078 (-0.05)	-0.0167 (-0.08)			-0.154 (-1.48)	-0.114 (-1.49)	-0.0524 (-0.30)	-0.208 (-0.86)
$TAX_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_{13})			-0.0385 (-0.28)	0.0201 (2.06)	-0.446 (-1.92)	-0.472 (-1.55)			-0.0399 (-0.23)	0.0214 (1.83)	-0.732 (-2.33)	-0.109 (-0.30)
$TAX_{t-1} * FULL_{t-1} * \Delta NI_{t-1}$ (∂_{17})			0.0595 (0.56)	0.0003 (0.16)	0.117 (1.21)	-0.0055 (-0.05)			0.287 (2.57)	0.00334 (1.75)	0.315 (3.04)	0.180 (1.31)
$TAX_{t-1} * FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (∂_{18})			-0.361 (-2.22)	-0.0053 (-1.95)	-0.326 (-2.12)	-0.400 (-2.21)			-0.786 (-3.80)	-0.0115 (-3.37)	-0.637 (-3.16)	-0.974 (-4.08)
RATIO_FULL		8.50 (8.23)						6.59 (5.04)				
$IMR * \Delta NI_{t-1}$		-0.133 (-1.92)	-0.133 (-1.92)	-0.132 (-1.92)	-0.132 (-1.91)	-0.133 (-1.92)		0.0012 (0.02)	-0.0072 (-0.10)	0.0030 (0.04)	-0.0030 (-0.04)	-0.0081 (-0.10)
$IMR * D\Delta NI_{t-1} * \Delta NI_{t-1}$		0.266 (1.87)	0.254 (1.78)	0.249 (1.75)	0.253 (1.78)	0.235 (1.65)		0.187 (0.96)	0.168 (0.87)	0.154 (0.79)	0.173 (0.90)	0.139 (0.72)

Table 5: Hypotheses 1 and 2 on accounting conservatism: Heckman correction (after PSM), *continued*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Cost stickiness (Banker et al. 2016)	--	Included	Included	Included	Included	Included	--	Included	Included	Included	Included	Included
Interacted industry-, year-, country- fixed effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N =	85,152	85,152	85,152	85,152	85,152	85,152	37,172	37,172	37,172	37,172	37,172	37,172
R ² (<i>Pseudo-R</i> ²) in %	1.42	21.7	21.7	21.7	21.7	21.7	0.79	30.7	31.0	31.0	31.0	31.1
F-Stat. (<i>Wald Chi</i> ² - <i>Stat.</i>)	194.37	88.2	83.1	83.2	83.1	83.5	67.91	62.4	59.3	59.2	59.3	59.7
VIF FULL / VIF Inverse Mills ratio		2.99/4.28	6.72/4.28	11.94/4.29	6.18/4.29	8.86/4.29		3.06/4.80	5.71/4.74	8.58/4.75	5.67/4.75	6.47/4.81

This table shows the endogeneity-adjusted regression analysis of liability status on the association between accounting conservatism and liability status. We define *RATIO_FULL* as the ratio $\frac{\text{full-liability firms in region}}{\text{limited liability firms in region}}$ for each region of a country before propensity score matching. Columns 1-6 refer to the full sample; Columns 7-12 to the sample of financially sound firms (defined in Table 3), each after propensity score matching. For a definition of $\Delta NI_{i,t}$, $D\Delta NI_{i,t}$, *FULL*, *TAX_BOOK* and the corporate income tax rate variables, see Table A1 in the appendix and Tables 3 and 4. Cost stickiness is defined in Table 3. *t*- (*z*-)statistics using a two-tailed test are reported in parentheses. Robust standard errors have been adjusted for heteroscedasticity and clustering at the firm level.

Table 6: Hypothesis 1: Change of minimum capital requirements and accounting conservatism

	Pred. sign	$\Delta NI_{i,t}$ Coeff. (t-value)	$\Delta NI_{i,t}$ Coeff. (t-value)
		All firms (1)	Financially sound firms (2)
ΔNI_{t-1} (θ_2)	0/-	-0.208 (-3.93)	-0.207 (-3.32)
$D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_3)	-	-0.0374 (-0.44)	-0.399 (-3.96)
$FULL_{t-1} * \Delta NI_{t-1}$ (θ_6)		-0.0309 (-0.85)	-0.0294 (-0.62)
$FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_7)	+	0.0742 (1.29)	0.356 (4.14)
$POST * \Delta NI_{t-1}$ (θ_{13})		0.0257 (0.46)	0.140 (2.10)
$POST * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_{14})		-0.204 (-2.29)	-0.268 (-2.59)
$POST * FULL_{t-1} * \Delta NI_{t-1}$ (θ_{17})		-0.0595 (-0.78)	-0.215 (-2.09)
$POST * FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_{18})	+	0.107 (0.94)	0.266 (1.47)
Cost stickiness (Banker et al. 2016)		Included	Included
Interacted industry and year fixed effects		Included	Included
N =		50,446	21,096
Adj. R ² in %		18.4	26.4
F-Stat.		73.3	52.9

Table 6 shows accounting conservatism of limited liability and full-liability firms in Italy and Norway before and after minimum capital requirements were significantly lowered in 2012 and 2013, respectively. For a definition of $\Delta NI_{i,t}$, $D\Delta NI_{i,t}$, $FULL$, and cost stickiness, see Table 3. $POST$ is a binary variable with a value of 1 if the observation is in 2014 (2013) or later in Norway (in Italy, respectively), and a value of 0 if the observation is in 2012 (2011) or earlier in Norway (in Italy). t -statistics using a two-tailed test are reported in parentheses. Robust standard errors have been adjusted for heteroscedasticity and clustering at the firm level.

Table 7: Hypothesis 2: Increase in the corporate income tax rate and accounting conservatism

Pred. sign	$\Delta NI_{i,t}$ Coeff. (t-value)		
	Full sample, PSM 1:9	Financially sound firms, PSM 1:9	Financially sound firms, PSM 1:1
	(1)	(3)	(4)
ΔNI_{t-1} (θ_2)	-0.194 (-4.74)	-0.104 (-2.08)	-0.243 (-2.91)
$D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_3) -	-0.311 (-4.32)	-0.512 (-5.71)	-0.725 (-4.44)
$FULL_{t-1} * \Delta NI_{t-1}$ (θ_6)	-0.0064 (0.20)	-0.0116 (-0.33)	-0.0186 (-0.41)
$FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_7) +	0.110 (2.24)	0.236 (3.66)	0.278 (3.05)
$INCR_TAXR_{t-1} * \Delta NI_{t-1}$ (θ_{13})	0.0076 (0.15)	-0.0284 (-0.45)	-0.149 (-0.95)
$INCR_TAXR_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_{14})	0.103 (1.25)	0.219 (2.08)	0.400 (1.53)
$INCR_TAXR_{t-1} * FULL_{t-1} * \Delta NI_{t-1}$ (θ_{17})	0.124 (0.98)	0.427 (3.45)	0.467 (2.65)
$INCR_TAXR_{t-1} * FULL_{t-1} * D\Delta NI_{t-1} * \Delta NI_{t-1}$ (θ_{18})	-0.291 (-1.39)	-0.780 (-3.86)	-0.815 (-2.82)
Cost stickiness (Banker et al. 2016)	Included	Included	Included
Interacted industry-, year- and country-fixed effects	Included	Included	Included
N =	71,344	32,531	7,452
Adj. R ² in %	21.4	31.0	27.3
F-Stat.	73.6	55.2	40.7

Table 7 shows how an increase in corporate income tax rate affects accounting conservatism of full-liability and limited liability firms. $INCR_TAXR$ is a dummy variable with a value of 1 if there was an increase in $COMB_TAXRATE$ (the combined corporate tax rate according to the OECD tax database), and with a value of 0 if there was no change; see https://stats.oecd.org/index.aspx?DataSetCode=Table_II1. See Table A2 in the appendix for the development of corporate income tax rates over time. For a definition of $\Delta NI_{i,t}$, $D\Delta NI_{i,t}$, $FULL$ and cost stickiness, see Table 3. t -statistics using a two-tailed test are reported in parentheses. Robust standard errors have been adjusted for heteroscedasticity and clustering at the firm level.

Notes

¹ We consider the following legal forms to reflect full-liability firms: Belgium: Société en nom collectif / Vennootschap onder firma (SNC/VOF), Société en commandite simple / gewone commanditaire vennootschap, (SCS / Comm. V). Denmark: Interessentskaber (I/S), Kommanditselskaber (K/S). Estonia: Täisühing (Tü), Usaldusühing (Uü). Finland: Avoin yhtiö (AY), Kommandiittiyhtiö (KY), Toiminimi (TMI). France: Société en nom collectif (SNC), Société en commandite simple (SCS). Germany: Offene Handelsgesellschaft (OHG), Kommanditgesellschaft (KG), Eingetragener Kaufmann. Italy: Società in Nome Collettivo (SNC), Società in Accomandita Semplice (SAS). Latvia: Pilna sabiedrība (PS), Komandītsabiedrība (KS), Individuālais Komersants (IK). Norway: Ansvarlige selskaper (ANS) / Deltakerlignet selskap (DA), Kommandittselskap (KS), Enkeltpersonforetak (EPF). Spain: Sociedad colectiva, Sociedad comanditaria simple. The legal forms of unlimited liability firms include: Belgium: Société privée à responsabilité limitée/besloten vennootschap met beperkte aansprakelijkheid (SPRL/BVBA), Denmark: Anpartsselskab (ApS), Estonia: Osühing (Oü), Finland: Osakeyhtiö (OY), France: Société à responsabilité limitée (SARL), Germany: Gesellschaft mit beschränkter Haftung (GmbH), Italy: Società a responsabilità limitata (SRL), Latvia: Sabiedrība ar ierobežotu atbildību (SIA), Norway: Aksjeselskap (AS), Spain: Sociedad de Responsabilidad Limitada (SL). See the online appendix for more detailed information.

² We also ran one-to-one nearest neighbor matching, and obtained qualitatively and statistically consistent results for financially sound firms.

³ See OECD, https://stats.oecd.org/index.aspx?DataSetCode=Table_III. Accessed 13 April 2022.

⁴ In order to identify and link the regions with the postal codes in the databases, we employed NUTS (Nomenclature of territorial units for statistics) from Eurostat, a classification that enables cross-border statistical comparisons at various regional levels within the EU. For an overview of NUTS, see:

https://ec.europa.eu/eurostat/databrowser/view/demo_r_d3area/default/table. Accessed 13 April 2022.

⁵ Since our measure of accounting conservatism requires data for at least two years before and after the change in capital requirements, only changes in Denmark (2011), Italy (2012), Latvia (2012), and Norway (2013) can be used. In the propensity score matched sample, there are no remaining full-liability firms in Denmark and Latvia before the switch.

ONLINE APPENDIX

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Belgium	Legal forms (firm-year observations of full sample)	(1) Société en nom collectif / Vennootschap onder firma (SNC/VOF) – General partnership (2) Société en commandite simple / gewone commanditaire vennootschap, (SCS / Comm. V) – Limited partnership	(1) 23 (2) 28	(4) Société privée à responsabilité limitée/besloten vennootschap met beperkte aansprakelijkheid (SPRL/BVBA) – Private limited liability company	(4) 449
	Disclosure of financial statements	Not compulsory (unless one of the unlimited liability partners is incorporated)	(1) 0 (2) 0	Compulsory disclosure with the National Bank of Belgium (Companies Code Article 141)	(4) 0
	Accrual basis	Accrual basis is compulsory with partnerships and net turnover > €500,000. Otherwise, only compulsory if firm applies double-entry bookkeeping	(1) 18 (2) 17	Accrual basis is compulsory	(4) 254
	Audit of financial statements	Audit not required	(1) 0 (2) 0	Audit required if ≥ 100 employees or if two out of three criteria are exceeded for two consecutive years: • Total assets \geq €3,650,000 • Net turnover \geq €7,300,000 • Employees ≥ 50 (Companies Code Article 141)	(4) 0

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Denmark	Legal forms (firm-year observations of full sample)	(1) Interessentskaber (I/S) – General partnership (2) Kommanditselskaber (K/S) – Limited partnership	(1) 24 (2) 165	(4) Anpartsselskab (ApS) – Private limited liability company	(4) 357
	Disclosure of financial statements	Generally not compulsory	(1) 0 (2) 0	Compulsory disclosure in the Commercial Register	(4) 0
	Accrual basis	Compulsory for partnerships	(1) 24 (2) 165	Accrual basis is compulsory	(4) 357
	Audit of financial statements	Generally not compulsory	(1) 0 (2) 0	Auditor required for partnerships and limited liability firms if two out of three criteria are exceeded for two consecutive years: • Total assets > €200,000 • Net turnover > €400,000 • Employees > 12	(4) 0
Estonia	Legal forms (firm-year observations of full sample)	(1) Täisühing (Tü) – General partnership (2) Usaldusühing (Uü) – Limited partnership	(1) 94 (2) 191	(4) Osahing (Oü) – Private limited company	(4) 2,446
	Disclosure of financial statements	Compulsory disclosure for partnerships in the Commercial Register if a limited liability firm or a non-profit organization is a general partner	(1) 0 (2) 0	Compulsory disclosure in the Commercial Register	(4) 0
	Accrual basis	Accrual basis is compulsory for full-liability firms	(1) 94 (2) 191	Accrual basis is compulsory for limited liability firms	(4) 2,446
	Audit of financial statements	Audit required for partnerships if share capital exceeds €25,000 or if firm meets two out of three criteria: (a) Net turnover > €639,000, (b) Total assets > €320,000, (c) Employees > 10	(1) 0 (2) 7	Audit required for limited liability if share capital exceeds €25,000 or if firm meets two out of three criteria: (a) Net turnover > €639,000, (b) Total assets > €320,000, (c) Employees > 10	(4) 63

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Finland	Legal forms (firm-year observations of full sample)	(1) Avoin yhtiö (AY) – General partnership (2) Kommandiittiyhtiö (KY) – Limited partnership (3) Toiminimi (TMI) – Sole proprietorship	(1) 3 (2) 81 (3) 36	(4) Osakeyhtiö (OY) – Private limited liability company	(4) 1,080
	Disclosure of financial statement	Compulsory disclosure for partnerships with Finnish Patent and Registration if two out of three criteria are exceeded for two consecutive years: • Total assets ≥ €3,650,000 • Net turnover ≥ €7,300,000 • Employees ≥ 50 (Chapter 3 Sec. 9 Accounting Act 2004)	(1) 0 (2) 4 (3) 0	Compulsory disclosure for limited liability firms with Finnish Patent and Registration if two out of three criteria are exceeded for two consecutive years: • Total assets ≥ €3,650,000 • Net turnover ≥ €7,300,000 • Employees ≥ 50 (Chapter 3 Sec. 9 Accounting Act 2004)	(4) 36
	Accrual basis	Accrual basis is compulsory (Chapter 3 Sec. 3 Accounting Act 2004)	(1) 3 (2) 81 (3) 36	Accrual basis is compulsory (Chapter 3 Sec. 3 Accounting Act 2004)	(4) 1,080
	Audit of financial statements	No audit required	(1) 0 (2) 0 (3) 0	Audit required if two out of three criteria are exceeded for two consecutive years: • Total assets ≥ €100,000 • Turnover ≥ €200,000 • Employees ≥ 3 (Auditing Act 459/2007, Sec. 4 § 2).	(4) 0

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
France	Legal forms (firm-year observations of full sample)	(1) Société en nom collectif (SNC) – General partnership (2) Société en commandite simple (SCS) – Limited partnership	(1) 1,537 (2) 79	(4) Société à responsabilité limitée (SARL) – Private limited liability company	(4) 12,706
	Disclosure of financial statement	Compulsory for partnerships only if no individual partner exists	(1) 0 (2) 0	Compulsory disclosure in the Commercial and Companies Register	(4) 0
	Accrual basis	Compulsory for partnerships. For sole proprietorships only if firm applies double-entry bookkeeping	(1) 1,537 (2) 79	Accrual basis is compulsory	(4) 12,706
	Audit of financial statements	Audit required for partnerships if two out of three criteria are exceeded for two consecutive years: • Total assets > €1,550,000 • Net turnover > €3,100,000 • Employees > 50	(1) 494 (2) 20	Audit required for limited liability firms if two out of three criteria are exceeded for two consecutive years: • Total assets > €1,550,000 • Net turnover > €3,100,000 • Employees > 50	(4) 3,159

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms			Limited liability firms	
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Germany	Legal forms (firm-year observations of full sample)	(1) Offene Handelsgesellschaft (OHG) – General partnership (2) Kommanditgesellschaft (KG) – Limited partnership (3) Eingetragene(r) Kauffrau/Kaufmann – Sole proprietorship	(1) 102 (2) 15 (3) 21	(4) Gesellschaft mit beschränkter Haftung (GmbH) – Private limited liability company	(4) 1,058
	Disclosure of financial statement	Compulsory disclosure in the German Federal Gazette if two out of three criteria are exceeded for two consecutive years: • Total assets > €65,000,000 • Net turnover > €130,000,000 • Employees > 5,000	(1) 0 (2) 0 (3) 0	Compulsory disclosure in the German Federal Gazette	(4) 0
	Accrual basis	Accrual basis is compulsory for full-liability firms	(1) 102 (2) 15, (3) 21	Accrual basis is compulsory for limited liability firms	(4) 1,058
	Audit of financial statements	Not compulsory	(1) 0 (2) 0 (3) 0	Audit required if two out of three criteria are exceeded for two consecutive years: • Total assets > €4,840,000 • Net turnover > €9,680,000 • Employees > 50	(4) 0

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Italy	Legal forms (firm-year observations of full sample)	(1) Società in Nome Collettivo (SNC) – General partnership (2) Società in Accomandita Semplice (SAS) – Limited partnership	(1) 1,709 (2) 3,573	(4) Società a responsabilità limitata (SRL) – Private limited liability company	(4) 37,582
	Disclosure of financial statement	Not compulsory	(1) 0 (2) 0	Compulsory disclosure with Trade Register	(4) 0
	Accrual basis	Accrual basis is compulsory for full-liability firms	(1) 1,709 (2) 3,573	Accrual basis is compulsory for limited liability firms	(4) 37,582
	Audit of financial statements	Audit is not compulsory	(1) 0 (2) 0	Audit required if two out of three criteria are exceeded for two consecutive years: • Total assets > €4,400,000 • Net turnover > €8,800,000 • Employees > 50	(4) 0

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms			Limited liability firms	
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Latvia	Legal forms (firm-year observations of full sample)	(1) Pilna sabiedrība (PS) – General partnership (2) Komandītsabiedrība (KS) – Limited partnership (3) Individuālais Komersants (IK) – Sole proprietorship	(1) 21 (2) 2 (3) 102	(4) Sabiedrība ar ierobežotu atbildību (SIA) – Private limited liability company	(4) 790
	Disclosure of financial statement	Disclosure is required for partnerships in Enterprise Register if two out of three criteria are exceeded for two consecutive years: • Total assets > €50,000 • Net turnover > €100,000 • Employees > 5 (Sec. 66 + Sec. 54.1 § 2 Annual Accounts Law of June 2014) For individual firms: disclosure required if turnover exceeds €300,000 (Sec. 1 § 1)	(1) 9 (2) 2 (3) 6	Disclosure is required for limited liability firms in Enterprise Register if two out of three criteria are exceeded for two consecutive years: • Total assets > €50,000 • Net turnover > €100,000 • Employees > 5 (Sec. 66 + Sec. 54.1 § 2 Annual Accounts Law of June 2014) For individual firms: disclosure required if turnover exceeds €300,000 (Sec. 1 § 1)	(4) 97
	Accrual basis	Accrual basis is compulsory for partnerships; for individual firms only if turnover exceeds €300,000 (Sec. 1 § 1 + Sec. 10-14 Annual Accounts Law of June 2014)	(1) 19 (2) 2 (3) 6	Accrual basis is compulsory for limited liability firms (Sec. 1 § 1 + Sec. 10-14 Annual Accounts Law of June 2014)	(4) 167
	Audit of financial statements	No audit required (Sec. 62 § 1 Annual Accounts Law of June 2014)	(1) 0 (2) 0 (3) 0	Audit required if two out of three criteria are exceeded for two consecutive years (Sec. 62 § 1 + Sec. 54.1 § 2 Annual Accounts Law of June 2014): • Total assets > €50,000 • Net turnover > €100,000 • Employees > 5	(4) 0

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Norway	Legal forms (firm-year observations of full sample)	(1) Ansvarlige selskaper (ANS) / Deltakerlignet selskap (DA) – General partnership (2) Kommandittselskap (KS) – Limited partnership (3) Enkeltpersonforetak (EPF) – Sole proprietorship	(1) 763 (2) 410 (3) 882	(4) Aksjeselskap (AS) – Private limited liability company	(4) 15,950
	Disclosure of financial statement	Disclosure is required for EPF and for partnerships if two out of three criteria are met for two consecutive years: • Net turnover > €588,000 • Partners ≥ 5 • Employees ≥ 5	(1) 451 (2) 356 (3) 119	Compulsory disclosure in the Norwegian Register of Company Accounts (<i>Regnskapsregisteret</i>)	(4) 7,106
	Accrual basis	Accrual basis is compulsory for full-liability firms	(1) 763 (2) 410, (3) 882	Accrual basis is compulsory for limited liability firms	(4) 15,950
	Audit of financial statements	Auditor is required if two out of three criteria are met for two consecutive years: • Net turnover > €588,000 • Partners ≥ 5 • Employees ≥ 5	(1) 451 (2) 356 (3) 119	Audit is compulsory	(4) 7,106

Mandatory disclosure, mandatory accrual accounting, and mandatory audit regulations in various countries, *continued*

	Full-liability firms		Limited liability firms		
	Regulation	Firm-year observations	Regulation	Firm-year observations	
Spain	Legal forms (firm-year observations of full sample)	(1) Sociedad colectiva – General partnership (2) Sociedad comanditaria simple – Limited partnership	(1) 163 (2) 134	(4) Sociedad de Responsabilidad Limitada (SL) – Private limited liability company	(4) 2,641
	Disclosure of financial statement	Compulsory for partnerships	(1) 163 (2) 134	Compulsory for limited liability firms	(4) 2,641
	Accrual basis	Accrual basis is compulsory for full-liability firms	(1) 163 (2) 134	Accrual basis is compulsory for limited liability firms	(4) 2,641
	Audit of financial statements	Auditor required for partnerships if abbreviated format is not allowed, i.e., if two out of three criteria are exceeded for two consecutive years: • Net turnover > €5,750,000 • Balance sheet > €2,850,000 • Employees > 50	(1) 13 (2) 79	Auditor required for limited liability firms if abbreviated format is not allowed, i.e., if two out of three criteria are exceeded for two consecutive years: • Net turnover > €5,750,000 • Balance sheet > €2,850,000 • Employees > 50	(4) 789

This table shows the legal forms and their respective disclosure and audit requirements in the countries under investigation. The number in the columns refer to the following legal forms: (1) general partnership, (2) limited partnership, (3) sole proprietorship, and (4) limited liability firm. The firm-year observations are after matching. The basic source is European Union (2011); for Finland, it is the Accounting Act of 2004 (<http://www.finlex.fi/fi/laki/kaannokset/2007/en20070459.pdf>), see also Ojala, Kinnunen, Collis, and Niemi (2016); for Latvia, it is the Annual Accounts Law of June 2014, see https://www.fm.gov.lv/files/gramatvedibaunrevizija/Annual%20Accounts%20Law_1.pdf. The observations describe the firm-years after propensity score matching. Since the samples controlling for (a) mandatory disclosure, (b) accrual accounting, and (c) mandatory audit of financial statements differ, we reran propensity score matching for each sample. As a consequence, the number of limited liability firms might differ for individual samples.