Tax avoidance and the cost of debt for SMEs: Evidence from Spain

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ABSTRACT

We investigate the effect of tax avoidance on the cost of debt for SMEs. Tax avoidance may increase a firm's cash flows on one hand, but also increase the agency costs, the information risk, and the risk of scrutiny by tax authorities on the other, affecting the cost of debt in opposing ways. Using a sample of Spanish SMEs for the period 2007–2019, our findings show that tax-avoiding SMEs face lower debt costs, suggesting that the positive effects of tax avoidance prevail over the negative ones for SMEs. This finding is consistent with a more favourable assessment of SMEs' tax avoidance activities by their key finance providers (banks), given SME unique characteristics and their lower agency costs.

1. Introduction

In this study we examine whether tax avoidance practices affect the cost of debt for small and medium-sized enterprises (SMEs)[1]. Prior research has examined the consequences of tax avoidance on the cost of debt mainly with regard to large firms (Lim, 2011; Hasan et al., 2014; Beladi et al., 2018; Isin, 2018; Kovermann, 2018; Shevlin et al., 2020) and the results are mixed. However, the empirical evidence about this relationship in private firms, especially SMEs, is scant. More importantly, the effect of tax avoidance on the cost of debt for SMEs can be very different than that for large firms given their firm characteristics, their relationship with creditors, and the tax-avoidance practices implemented in these firms.

The strand of the literature which analyses the relationship between tax avoidance and the cost of debt has shown the existence of two opposing effects (e.g. Lim, 2011; Hasan et al., 2014). On one hand, by reducing income tax expenses, firms increase their after-tax cash flows, which may lead them to require less debt, thus enhancing their credit quality, reducing their default risk and therefore lowering their cost of debt. On the other hand, the literature has also highlighted the consequences on the risk exposure of financing providers, both shareholders and debt holders, associated with tax avoidance prac-

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[1] We consider a broad definition of tax avoidance i.e., activities or practices that reduce the firm's explicit taxes, regardless of whether they are illegal practices (i.e. tax evasion), they are completely legal or they fall within a grey or ambiguous area of tax law. Thus, this definition includes either non-debt tax shields (such as tax shelters, accelerated depreciation schemes, investment deductions and tax credits, or tax loss carry forwards) or shifting income to a low-tax foreign country (e.g. strategic transfer pricing arrangements and cost-sharing agreements) (Hanlon and Heitzman, 2010; Goh et al. 2016).

tices. In this case, the opacity of these practices, the potential increase of agency costs, and the risk of audit by tax authorities may increase the cost of capital, in general, and the cost of debt, in particular. Hence, depending on the trade-off between these two competing effects, tax avoidance can have a significant positive or negative effect on the cost of debt, as the mixed results provided by prior empirical studies have shown.

The interest in studying tax avoidance in SMEs is contingent on the differences between these and large firms regarding profitability, business risks, ownership, and financial restrictions, which lead to particular agency and information asymmetry problems in small businesses (e.g. Pettit and Singer, 1985; Ang, 1992; Bartholdy and Mateus, 2011). Taxes are a key issue for SME management, given the importance of cash-flow management and the financing constraints that characterise this type of firm.[2] SMEs could use tax avoidance as a mechanism to internally raise expected after-tax cash flows and thus reduce leverage and have a higher level of financial slack. But at the same time tax avoidance is costly, because it can increase the risk perceived by fund providers, given that tax avoiding strategies can be associated with corporate opacity, managerial rent diversion and cash-flow volatility, in addition to possible penalties by tax authorities (Hasan et al., 2014; Desai and Dharmapala, 2006, 2009; Balakrishnan et al., 2019; Shevlin et al., 2020). However, the negative effects of tax avoidance for SMEs arising from the increase in agency costs and information risks are mitigated by the characteristics of the tax avoidance practices implemented by SMEs, as well as their ownership structure, their relationship with their main creditors, and the lower likelihood of SMEs being audited by tax authorities. Accordingly, if debt providers' assessment of the benefits of tax avoidance outweighs its induced risks, tax avoidance could positively affect the cost of debt in SMEs.

We examine the association between tax avoidance and the cost of debt in SMEs by using a panel of Spanish SMEs for the period 2007–2019. Spain is a powerful setting for our research question because it is a country with a banking-oriented financial system, where the vast majority of business entities are bank-dependent SMEs and where the main source of external financing for SMEs is bank credit (e.g. Demirgüç-Kunt and Maksimovic, 2002; Carbó-Valverde et al., 2009, European Central Bank, 2018). In terms of the relevance in the Spanish economy, SMEs represent 99.88% of firms and provide 65.9% of the country's employment (Spanish Department of Industry–Dirección General de Industria y de la Pequeña y Mediana Empresa, 2018). Like other European countries, such as France, Belgium, and Finland, Spain is considered as a high tax alignment country (Van Tendeloo and Vanstraelen, 2008). However, the common tax incentives for Spanish SMEs, such as special tax rates, tax credits, special depreciation schemes or tax allowances, which are commonly used in European countries (Bergner et al., 2017), are considered to be the most generous tax incentives to reduce tax liabilities of all the EU countries (European Commission, 2015).

We measure tax avoidance as the difference between the statutory tax rate and the effective tax rate, and the cost of debt as the effective interest rate of the interest-bearing debt. We run regressions using firm fixed effects, which allow us to control for the influence of omitted firm-specific factors that are time invariant for each firm. We also examine the robustness of our results to OLS cross sectional regressions using firm-clustered standard errors robust to heteroskedasticity and firm serial correlation. Moreover, to address concerns about sample selection and endogeneity due to reverse causality, i.e., firms with higher cost of debt may engage in more tax avoidance to generate cash flows (Hasan et al., 2014; Isin, 2018), we conduct tests using a propensity score matching method and a change analysis.

We find robust evidence that tax avoidance is negatively related to the cost of debt for SMEs. In particular, we find that an increase in one standard deviation in our tax avoidance measures leads to decreases of 9 – 15 basis points in the cost of debt for SMEs.[3] This result suggests that tax avoidance may be an alternative source of funding to external borrowing for SMEs, which allows these firms to obtain lower debt cost financing from banks through enhancing their credit quality. In additional tests, we show that whereas size, profitability and the income tax law change do not affect the negative association between tax avoidance and the cost of debt, our results are stronger for SMEs with low agency costs and lower information risk.

This study contributes to the literature in several ways. First, it contributes to the scarce research on the effects of tax avoidance for SMEs. Our results suggest that under low agency costs and good financial information, the benefits of the less sophisticated tax avoidance practices of SMEs (such as investment allowances and tax credits) outweigh their costs. This complements the findings of Kovermann and Wendt (2019) for large German family firms, where the agency conflicts are also lower than in firms with more dispersed ownership. Our study is also related to other two strands of research. The first one examines the influence of tax avoidance on the costs of different types of debt, i.e., public debt and bank loans (Lim, 2011; Lin et al., 2014; Hasan et al., 2014; Beladi et al., 2018; Shevlin et al., 2020). The second one investigates how banks affect the borrower's tax behaviour and price tax avoidance risk in their debt contracts (Gallemore et al., 2019; Cook et al., 2020; Lin et al., 2020). Finally, our findings inform regulators in the OECD and EU countries and respond to calls from the OECD (2015) to understand the impact of SME taxation on the challenges faced by SMEs. Since SMEs in these countries typically receive tax benefits and incentives from the regulators (e.g., innovation or investment tax credits), and obtain their main source of external financing from bank debts, our results may help understand the behaviour of these companies.

The rest of the study proceeds as follows. Section 2 discusses the literature and develops the hypothesis, Section 3 describes the research design, Section 4 reports the empirical results, and the final section concludes.

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[2] Regulatory requirements and fixed costs associated with tax compliance, in terms of the percentage of sales and income, are significantly higher for SMEs than for larger firms (OECD, 2015).

[3] This economic effect is lower than the 17 and 64 basis point decrease found in listed firms (Lim, 2011; Kovermann, 2018, respectively).

2. Literature review and hypothesis development

2.1. Literature review

The assessment of default risk is crucial in the credit granting process. Expected future operating cash flows determine the firm's capacity to reimburse its debt and hence are a key parameter for debt pricing (Vander Bauwhede et al., 2015). Tax avoidance activities that increase a firm's internal cash flows due to the tax savings are therefore relevant for debt pricing. The increase in cash flows reduces the demand for debt and leaves more available resources for firms to service debt obligations, reducing the default risk and the likelihood of covenant violations, thus enhancing their credit quality. This is consistent with the DeAngelo and Masulis (1980)'s debt substitution hypothesis, which states that non-debt tax shields constitute substitutes for the tax benefits of debt which also reduce the demand for debt usage. Hence, tax avoidance can reduce the firm's default risk and can be a valuable source of financial slack. In fact, according to previous evidence, tax aggressive firms exhibit lower leverage (Graham and Tucker, 2006; Lin et al., 2014). Therefore, if lenders value these expected credit-risk-reducing effects of tax avoidance, they should then translate them into a lower cost of debt.

Nevertheless, although tax avoidance can reduce the default risk of a firm via cash flow savings, it can also increase other significant firm risks. First, several tax avoiding practices, such as those regarding R&D investments, foreign operations or complex structuring of transactions, can increase the business risk of the firm and thus the variance of the firm's cash flows (Goh et al., 2016). Tax avoidance also involves a higher likelihood of incurring direct costs related to audits, fines or penalties by tax authorities (Mills, 1998; Hanlon et al., 2017) and indirect costs which derive from the potential damage to the firm's reputation (Graham et al., 2014). Moreover, the tax literature has highlighted that the opacity of tax avoidance activities increases the information risk (Balakrishnan et al., 2019) and facilitates managerial rent extraction (Desai and Dharmapala, 2006; Desai et al., 2007; Shams et al., 2022). However, the extent of the tax-induced agency costs may depend on ownership structure and the corporate governance quality of the firm (Desai and Dharmapala, 2006, 2009; Lim, 2011; Hasan et al., 2014).

The empirical evidence on tax avoidance and the cost of debt is mixed. On the one hand, some studies document that firms with a higher level of tax avoidance face a lower cost of debt, such as Lim (2011) for a sample of Korean listed companies and Kovermann (2018) for firms listed on the Frankfurt Stock Exchange. These findings suggest that creditors generally assess tax avoidance positively, considering it as a credit quality improving factor. By contrast, other studies find that tax avoidance increases the cost of borrowing in large public firms (Hasan et al., 2014; Beladi et al., 2018; Isin, 2018; Shevlin et al., 2020), supporting the argument that lenders' assessments of the inherent risks associated with tax avoidance activities outweigh the benefits of tax savings.

Prior literature also shows that the relationship with debtholders can affect the association between tax avoidance and cost of debt. In US public firms, Hasan et al. (2014) and Shevlin et al. (2020) find that tax avoidance increases the cost of bonds to a larger extent than the cost of bank loans. This suggests that banks assess the consequences of tax avoidance more efficiently than bond debtholders (Shevlin et al., 2020). Due to their close relationships with their borrowers, banks have greater access than bond investors to firms' private information and greater ability to monitor their borrowers. Moreover, bank monitoring may also affect borrowers' tax avoidance behaviour, since banks may incentivise and assist their clients in implementing tax avoidance practices. Hence, the improvements in their borrowers' credit quality triggered by tax savings may benefit banks and thus mitigate agency problems associated with tax avoidance activities (Gallemore et al., 2019; Cook et al., 2020; Lim et al, 2020).

All previous studies on the effects of tax avoidance on the cost of debt focus on listed firms with access to public debt markets. However, SMEs do not have access to market funding via bond issuance, with bank loans being the main source of external debt financing for SMEs. Our study is, to the best of our knowledge, the first to examine the impact of tax avoidance on the cost of debt for SMEs.

2.2. Hypothesis development

SMEs are different from large firms and "are not just larger firms scaled down" (Scherr and Hulburt, 2001 p. 85). For instance, compared with large firms, smaller firms are inherently less profitable, riskier, and more bank-dependent for their financing. Most SMEs are private firms, their ownership structure is generally less dispersed than that of public firms, and their owners are usually involved in the management of the firm, which leads to low agency costs. SMEs are also subject to specific tax rules, have more limitations in the implementation of complex tax avoidance strategies, and are less likely to be audited by tax authorities. These particular characteristics of SMEs and their tax avoidance practices may result in lower costs associated with tax avoidance and, consequently, in a positive cost-benefit trade-off.

The agency costs associated with tax avoidance (i.e., managerial rent diversion) may be different for public (mostly large companies) and private firms (mostly SMEs), due to their differences in ownership concentration. SMEs are usually owner-managed and show a low degree of separation between control and ownership. Hence, shareholders and managers interests are more aligned and there is hardly, if any, free cash flow problem (Jensen, 1986). Consequently, agency costs are significantly reduced when the manager's ownership share increases in small businesses (Ang et al., 2000). Prior research even

shows that banks do not require increased interest rates for owner-manager agency conflicts in small firms (Brau, 2002). Therefore, tax avoidance is less likely to be masking managerial rent extraction in SMEs than in larger firms.

The impact of tax avoidance on the cost of debt is also influenced by the level of information asymmetry between borrowers and lenders. For instance, Beladi et al. (2018) find, in a sample of Chinese listed companies, that tax avoidance is associated with higher bank loan costs, but this effect is lower in firms with a higher corporate transparency. Kovermann (2018) finds a negative association between tax avoidance and the cost of debt for large companies in a bank-dominated economy. He argues that the German banks have access to private information on the risks of tax avoidance of their debtors affecting the cost of debt. This effect could be more relevant for SMEs. Effectively, the literature shows that banks generally establish strong lending relationships with smaller firms that help overcome the problems of information asymmetries and help set interest rates on loans (e.g. Berger and Udell, 1995; Boot, 2000). Therefore, through continuous monitoring and regular screening of their borrowers, banks are expected to recognize tax avoidance activities implemented by SMEs and even advise them in relation to the optimal ones. As a consequence, banks could price more efficiently, possibly with a favourable assessment, the associated benefits and risks of tax avoidance activities in SMEs.

The risks and costs of tax avoidance depend on the type of tax avoidance activity. Tax avoidance encompasses an extensive catalogue of tax planning practices that differ greatly in terms of complexity, legality, and the uncertainty of tax savings. However, SMEs have fewer opportunities than large corporations or even none at all to reduce tax burdens through international complex and opaque tax planning strategies such as transfer pricing or foreign tax havens (Rego, 2003; European Commission, 2015; Belz et al., 2019). Instead, less complex and presumably legal tax avoidance practices, such as special depreciation schemes, investment allowances and tax credits, constitute the most common tax-avoiding activities implemented by these firms (Bergner et al., 2017). Those tax simpler and less opaque strategies may increase firm risk to a lesser extent than those which are more complex (Goh et al., 2016). Consequently, it can be expected that the main creditors of SMEs do not see these as tax avoidance practices that exacerbate firm risk.

Furthermore, the probability of tax audit is negatively related to firm size (Szczesny and Valentincic, 2013; Bachas et al., 2019, Martin et al., 2020).[4] At the same time, their lower visibility and public scrutiny leads smaller firms to be less concerned about reputational damages from engaging in tax avoidance (Graham et al., 2014). The consequence is that SMEs are less likely than large firms to face additional expenses, fines, penalties, or reputational costs that may result from tax audits.

Based on the previous discussion, we expect the lenders' assessment of the costs and benefits related to SME tax avoidance to be positive. Thus, our hypothesis, stated in alternative form, is that *Tax avoidance is associated with a lower cost of debt for SMEs.*

3. Research design

3.1. Regression model and variable definitions

To test our hypothesis, we use the following firm fixed effects model:

$$COD_t = \beta_0 + \beta_1 TAXAV_t + \sum_j Controls_t + \mu + \eta + \varepsilon \tag{1}$$

where *COD* is the cost of debt; *TAXAV* is one of the different tax avoidance proxies defined below; *Controls* are the firm-level control variables; μ are industry-year fixed effects; η are firm fixed effects, and ε is the error term. We include industry-year fixed effects to control for time varying heterogeneity across-industries. We also include firm fixed effects which control for time-invariant unobservable firm-specific factors and reduce concerns on endogeneity due to omitted variables (Lim, 2011; Hasan et al., 2014). We estimate model (1) with standard errors clustered at the firm level. Hence, coefficient β_1 captures the relation between tax avoidance and the cost of debt using within-firm variation over time.

The cost of debt is the effective interest rate on the interest-bearing debt of the firm. Following Pittman and Fortin (2004), we measure it as the reported interest expense for each year divided by the average short- and long-term interest-bearing debt at the beginning and end of the same year. The literature points out that this measure is a noisy proxy and may suffer from a potential measurement error, which can be partially overcome by eliminating outliers (Pittman and Fortin, 2004; Francis et al., 2005; Kim et al., 2011). Therefore, we trim the cost of debt variable at the 2nd and 98th percentiles.

We use two main measures of tax avoidance: *TAXDIF* and *TAXDIF3y*. *TAXDIF* is the difference between the statutory tax rate that corresponds to a firm-year observation and its effective tax rate (ETR)[5], where the ETR is calculated as tax expense over pre-tax income. As in previous studies, we take positive values of pre-tax income and truncate the observations of ETR outside the interval [0,1] to avoid confusing interpretations of ETR (Dyreng et al., 2008; Chen et al., 2010; Badertscher et al., 2013; Koester et al., 2017). *TAXDIF3y* is the average of three consecutive years of *TAXDIF*. Thus, *TAXDIF3y* captures a firm's long-term tendency to tax avoidance and smooths out the annual variations in *TAXDIF* (Dyreng et al., 2008; Badertscher

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[4] SMEs may strategically limit their growth until a specific threshold to avoid stricter tax audits (Almunia and López-Rodríguez, 2018).

[5] The normal tax rate for Spanish companies was 35% until 2006, 32.5% in 2007, 30% from 2008 to 2014, 28% in 2015 and 25% from 2016 to 2019. In the Basque Country the special tax rate for general companies was 28% until 2017, 26% in 2018, and 24% in 2019, whereas in Navarre, the special tax rate for general companies was 28% in the period 2005–2019. A progressive schedule with a reduced (top) tax rate of 30% (35%) in 2005 and 2006, and 25% (30%) from 2007 to 2019 was applied to Spanish small firms. In the Basque Country the special tax rate for small firms was 24% until 2017, 22% in 2018, and 20% in 2019, whereas it was 23% in Navarre from 2005 to 2019.

et al., 2013; Koester et al., 2017; Khan et al., 2017). For robustness, we also use the *ETR* and the long-run ETR (*ETR3y*) as proxies for tax avoidance. In the calculation of *ETR3y* we require the sum of pre-tax income in three consecutive years to be positive (Dyreng et al., 2008). Following Hasan et al. (2014) and Goh et al. (2016), we multiply *ETR* and *ETR3y* by −1 so that these variables increase as tax avoidance does. Therefore, by definition, higher values of *TAXDIF, TAXDIF3y, ETR*, and *ETR3y* indicate higher tax avoidance.

We include control variables that prior studies have shown to be determinants of the cost of debt (Pittman and Fortin, 2004; Francis et al., 2005; Kim et al., 2011; Hasan et al., 2014): firm size, leverage, interest coverage, liquidity, profitability, growth, collateral, earnings volatility, and accounting quality. As a proxy for firm size, *SIZE*, we use the natural logarithm of total assets; *LEV* is the leverage ratio calculated as total debt over total assets; *INTCOV* is the interest coverage ratio calculated as operating income over interest expenses; *LIQ* is the quick ratio, defined as liquid assets (current assets excluding inventory) over current liabilities. *ROA* is the ratio of operating income over total assets; *GROW* is calculated as net sales divided by lagged net sales; *TANG* is the ratio of property, plant and equipment to total assets; *ROAVLT* is the standard deviation of ROA from t-2 to t; and *AUDIT* is a dummy variable which equals 1 when firms are audited and 0 otherwise.

3.2. Sample

We obtain our sample of SMEs from SABI (Bureau van Dijk). Based on the criteria of the European Commission (Regulation 2014/651, June 2014, and Recommendation 2003/361, May 2003), we consider as SMEs those firms "which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million". We exclude micro-enterprises from our sample, i.e., firms with fewer than 10 employees and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million. We also exclude observations which present errors (positive expenses) or those whose equity, fixed assets, current assets, or current liabilities were less than 1,000€. We obtain the data for the period 2004–2019, but since the calculation of some variables requires values in t-1 and t-2 our sample covers the period 2007–2019. The result is an initial dataset consisting of 131,790 firm-year observations. Then we eliminate those without the data necessary to calculate the cost of debt, which yields 100,411 firm-year observations. Next we retain those observations with enough information for the calculation of the control variables (67,476) and our variables of tax avoidance (56,599). Finally, we winsorize the cost of debt at 2% and 98% and the control variables at 1% and 99%, which yields 46,105 observations for *TAXDIF* and *ETR*, 35,728 for *TAXDIF3y,* and 37,198 for *ETR3y*. The difference in the number of firm-year observations between the two long-run tax avoidance measures is a consequence of each measurement procedure.

4. Empirical results

4.1. Descriptive statistics

Table 1 reports the descriptive statistics of the variables used in our analyses. The average (median) cost of debt for the firms in our sample is 5.58% (4.43%), which are comparable to those reported by prior studies (e.g. Minnis, 2011; Vander Bauwhede et al., 2015). The cross-sectional averages of *TAXDIF* and *TAXDIF3y* are positive, suggesting that the Spanish SMEs engage in tax avoidance. The dispersion of these variables indicates that our sample comprises aggressive and non-aggressive tax avoidance firms. Recall that those firm-years with negatives or zero values of *TAXDIF* are considered non-tax aggressive, while those with positive values of *TAXDIF* are tax aggressive firm-years.

With regard to control variables, the mean value of firm size, measured by total assets, is 8,104 thousand euros. The average ratio of debt over assets is 55%. The mean of returns on assets is 3.62%, but with a wide dispersion (standard deviation of 3.71%). Tangible assets (property, plant and equipment) are, on average, 29.79% of total assets, and the standard deviation of ROA is around 1.59%. In our sample, 58.03% of firms have audited financial statements. In general, the significant level of dispersion in the values of control variables reflects the heterogeneity of our firm-year sample.

4.2. Main analysis

Table 2 reports the results from the firm fixed effects estimations of model (1) to test the effects of tax avoidance on the cost of debt. Each column reports the results from the estimations for each of our four tax avoidance measures. We find that the coefficients on *TAXDIF, TAXDIF3y, ETR*, and *ETR3y* are negative and significant at the 1% level. They are −0.010, −0.018, −0.011, and −0.009, respectively. Therefore, these results support our hypothesis that tax avoidance is associated with a lower cost of debt for SMEs. Regarding their economic significance, one-standard-deviation increase in *TAXDIF, TAXDIF3y, ETR*, and *ETR3y* is associated with an 11 basis point, 15 basis point, 12 basis point, and 9 basis point decrease in the cost of debt, respectively.[6] These economic effects on the cost of debt are lower than the reductions found for listed firms in prior studies – Lim (2011) finds a 17 basis point decrease with firm fixed effects estimates whereas Kovermann (2108) finds 64 basis

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[6] Following Goh et al. (2016), we assess the impact of a one-standard-deviation increase in each tax avoidance measure on the cost of debt by multiplying the value of the coefficient on each measure by its sample standard deviation.

Table 1
Descriptive statistics.

	# obs.	Mean	SD	10th perc.	Median	90th perc.
COD	46,105	0.0558	0.0488	0.0178	0.0443	0.1000
TAXDIF	46,105	0.0139	0.1086	−0.0592	0.0000	0.1464
TAXDIF3y	35,728	0.0137	0.0834	−0.0581	0.0021	0.1160
ETR	46,105	−0.2443	0.1071	−0.3167	−0.2500	−0.1165
ETR3y	37,198	−0.2527	0.0963	−0.3271	−0.2538	−0.1455
SIZE	46,105	8.6682	0.8287	7.5468	8.6709	9.7900
LEV	46,105	0.5534	0.1890	0.2883	0.5659	0.7968
INTCOV	46,105	12.0973	40.4035	1.1660	3.4769	27.7931
LIQ	46,105	1.2314	0.9830	0.4488	0.9870	2.2298
ROA	46,105	0.0362	0.0371	0.0038	0.0234	0.0871
GROW	46,105	0.6162	0.4975	−0.0207	0.8563	1.1436
TANG	46,105	0.2979	0.1934	0.0655	0.2679	0.5730
ROAVLT	46,105	0.0159	0.0171	0.0017	0.0104	0.0371
AUDIT	46,105	0.5803	0.4935	0.0000	1.0000	1.0000

Notes: This table reports descriptive statistics of the variables used. *COD* is the cost of debt, measured as the interest expense for the year divided by the average short- and long-term interest-bearing debt during the same year. *TAXDIF* is the difference between the statutory tax rate that corresponds to a firm-year observation according to the tax legislation and its ETR. *ETR* is total effective tax rate, defined as tax expense over pre-tax income, multiplied by −1. *TAXDIF3y* and *ETR3y* are long-run *TAXDIF* and *ETR*, respectively, considering an average of three consecutive years. *SIZE* is the natural logarithm of total assets. *LEV* is the total debt over total assets. *INTCOV* is interest coverage. *LIQ* is the quick ratio, defined as quickly available or liquid assets (current assets-inventory) over current liabilities. *ROA* is operating income divided by total assets. *GROW* is net sales divided by lagged net sales. *TANG* is the ratio of property, plant and equipment to total assets. *ROAVLT* is the standard deviation of ROA from *t*-2 to *t*. *AUDIT* is a dummy variable that takes the value 1 if the financial statements of the firm are audited and zero, otherwise.

Table 2
Effect of tax avoidance on cost of debt.

	(1)	(2)	(3)	(4)
TAXDIF	−0.010*** (−4.07)			
TAXDIF3y		−0.018*** (−3.55)		
ETR			−0.011*** (−4.25)	
ETR3y				−0.009*** (−2.81)
SIZE	−0.009*** (−5.05)	−0.007*** (−3.51)	−0.009*** (−5.09)	−0.008*** (−3.96)
LEV	−0.059*** (−11.44)	−0.066*** (−11.08)	−0.059*** (−11.45)	−0.064*** (−11.35)
INTCOV($x10^2$)	−0.013*** (−3.08)	−0.012*** (−2.97)	−0.013*** (−3.08)	−0.012*** (−3.01)
LIQ	−0.002** (−2.34)	−0.002** (−2.41)	−0.002** (−2.32)	−0.002** (−2.34)
ROA	−0.012 (−0.71)	−0.026 (−1.51)	−0.012 (−0.75)	−0.027 (−1.62)
GROW	0.011*** (7.67)	0.011*** (7.19)	0.011*** (7.74)	0.011*** (7.55)
TANG	−0.027*** (−7.26)	−0.027*** (−6.64)	−0.027*** (−7.24)	−0.027*** (−6.75)
ROAVLT	0.051** (2.55)	0.076*** (2.79)	0.050** (2.55)	0.061*** (2.62)
AUDIT	−0.003*** (−2.82)	−0.003*** (−2.62)	−0.003*** (−2.80)	−0.003*** (−2.70)
Intercept	0.179*** (10.59)	0.165*** (8.72)	0.176*** (10.42)	0.166*** (9.23)
Ind-year f.e.	Yes	Yes	Yes	Yes
Firm f.e.	Yes	Yes	Yes	Yes
R^2 within	0.1249	0.1211	0.1295	0.1217
#obs.	46,105	35,728	46,105	37,198

Notes: This table reports the results from firm fixed effects estimation models that examine the effect of tax avoidance on cost of debt (*COD*). Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. *** and ** denote significance levels at two-tail tests of 1%, and 5%, respectively.

points of decrease in his OLS estimates. Among the studies showing a positive association between tax avoidance and cost of debt, Hasan et al. (2014) report a 4.87 basis point increase in the cost of debt. Our findings suggest that the creditors generally have a positive assessment of tax avoidance practices for SMEs.

With regard to the control variables, consistent with the vast majority of prior studies on the cost of debt, the negative and significant coefficient at the 1% level on *SIZE* suggests that larger SMEs enjoy lower borrowing costs. It is accepted that larger firms have lower credit risk and are expected to face economies of scale in debt costs (Blackwell et al., 1998; Petersen and Rajan, 1994). The negative and significant coefficient on *LEV* is contrary to the positive sign expected as financial risk increases with leverage. However, our negative coefficient is consistent with those reported by prior studies focused on the cost of debt for private firms, such as Francis et al. (2005), Minnis (2011), or Vander Bauwhede et al. (2015). This negative relationship between leverage and cost of debt may be driven by economies of scales in debt cost, i.e. more attractive interest rates are offered to those firms that borrow larger amounts (Booth, 1992; Beatty et al., 2002). The coefficients on *INTCOV* and *LIQ* are negative and significant (at the 1% and 5% levels, respectively), suggesting that higher values for ratios of interest coverage and liquidity indicate less financial risk and, consequently, creditors impose lower interest rates. The coefficients on *ROA* are not statistically significant, but they are negative, indicating that more profitable SMEs are likely to be charged with lower debt costs.

The coefficients on *GROW* are positive and significant at the 1% level, which suggests that lenders impose higher debt costs to SMEs with more growth opportunities, since these firms are likely to suffer greater agency problems, (e.g. García-Teruel et al., 2010; Minnis, 2011). Likewise, the negative and significant coefficients at the 1% level on *TANG* suggest that SMEs can reduce the cost of debt by offering property, plant and equipment as collateral (e.g. Minnis, 2011; Vander Bauwhede et al., 2015). The positive and significant coefficients at the 1% and the 5% levels on *ROAVLT* indicate that firms with higher volatile earnings incur a higher cost of debt (e.g. Francis et al., 2005; Hasan et al., 2014). Finally, the negative and significant at the 1% level coefficients on *AUDIT* suggest that firms with audited financial statements face a lower cost of debt (e.g. Kim et al., 2011; Minnis, 2011).

4.3. Additional analyses

4.3.1. Tax avoidance effect by size and profitability

Two of the main firm characteristics which may determine whether a firm engages in tax avoidance are size and profitability (Brühne and Jacob, 2021; Jacob, 2022). In this section we examine whether these firm characteristics affect the relation between tax avoidance and cost of debt. We split the sample in small (fewer than 50 employees) and medium (from 50 to 250 employees) firms and, based on ROA, in firms of low (below the median) and high (above the median) profitability. As a preliminary check, we use univariate analyses to check the mean difference in tax avoidance engagement depending on size and profitability. Untabulated results show that larger and more profitable SMEs significantly – at the 1% level – engage in tax avoidance to a greater extent than smaller and less profitable SMEs. Table 3 reports the results for model (1) regressions by controlling for firm size (Panel A) and profitability (Panel B).[7] We find similar negative and significant associations between tax avoidance and the cost of debt for small and medium firms, on one hand, and for SMEs with low and high ROA, on the other. Therefore, the results suggest that the effect of tax avoidance on the cost of debt does not depend on firm size or firm profitability.

4.3.2. Tax avoidance effect by agency costs and information risk

In the following analyses we try to assess whether agency costs and information risk may explain the association between tax avoidance and cost of debt. Measuring agency costs requires detailed information on ownership structure and insiders, data which are not usually available for large samples of SMEs. In those firms where there is little separation between ownership and control (owner-manager firms), the agency costs and information asymmetry are at their minimum, whereas in private dispersed firms and public firms there are conflicts of interests which may affect the dividend policy decisions (Jensen and Meckling, 1976). Hence, we have focused on the firm dividend policy to proxy for agency costs in our sample of SMEs, since dividends can be used as a mechanism to reduce several types of agency conflicts (e.g. Easterbrook, 1984, Jensen, 1986). In this sense, Michaely and Roberts (2012) find an association between the payment of dividends and ownership structure: in those firms with lower agency costs (closely owned) the dividend policy is a residual financing decision, i.e., they are more likely not to pay dividends, whereas a more dispersed ownership structure in private firms represents incentives for the dividend policy.

Based on the above, first, we have obtained the information of the dividend payments for those firms in our sample that prepare the cash flow statement. Then we have classified these firms into low agency costs (those that do not pay dividends) and high agency costs (those that pay dividends). The results of the firm fixed effects estimates for both categories of firms are presented in Panel A of Table 4. We find a negative and significant association at the 1% level between tax avoidance and the cost of debt for firms that do not pay dividends (low agency costs). In contrast, in firms that do pay dividends (high agency costs) the association between tax avoidance and the cost of debt is not statistically significant.

For the information risk analysis, we rely on the information role of audit opinions in private debt contracting. Prior studies find that both public and private firms bear a higher cost of debt after receiving a modified audit opinion (Cano-Rodríguez et al., 2016; Chen et al., 2016; Liu et al., 2020). Note that audit opinions may be more important in private firms, such as

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[7] For space reasons, in the extension analyses we tabulate the coefficients for only *TAXDIF* and *TAXDIF3y*. The results using the other two tax avoidance measures, *ETR* and *ETR3y*, are generally similar to those tabulated.

Table 3

Effect of tax avoidance on cost of debt by firm size and profitability.

Panel A. Small firms vs medium firms	Small firms			Medium firms	
	(1)	(2)		(3)	(4)
TAXDIF	−0.010***			−0.010**	
	(−3.38)			(−2.24)	
TAXDIF3y		−0.019***			−0.015*
		(−2.84)			(−1.92)
Controls	Yes	Yes		Yes	Yes
Ind-year f.e.	Yes	Yes		Yes	Yes
Firm f.e.	Yes	Yes		Yes	Yes
R^2 within	0.1358	0.1273		0.1201	0.1128
#obs.	31,668	24,127		14,437	11,601

Panel B. Low ROA vs high ROA	Low ROA			High ROA	
	(1)	(2)		(3)	(4)
TAXDIF	−0.011***			−0.018***	
	(−3.85)			(−2.72)	
TAXDIF3y		−0.018***			−0.023**
		(−2.98)			(−2.08)
Controls	Yes	Yes		Yes	Yes
Ind-year f.e.	Yes	Yes		Yes	Yes
Firm f.e.	Yes	Yes		Yes	Yes
R^2 within	0.1668	0.1572		0.1106	0.1084
#obs.	23,053	17,876		23,052	17,852

Notes: This table reports the results from firm fixed effects estimation models that examine the effect of tax avoidance on cost of debt (*COD*) by firm size (Panel A) and profitability (Panel B). *Small firms* are those firms with a number of employees fewer or equal to 50. *Medium firms* are those firms with a number of employees between 50 and 250. *Low (High) ROA* includes those firms whose ROA is lower (higher) than the median. Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. ***, **, and * denote significance levels at two-tail tests of 1%, 5%, and 10%, respectively.

Table 4

Effect of tax avoidance on cost of debt by agency costs and information risk.

Panel A. Non-dividend (lower agency cost) vs dividend (higher agency cost) paying firms	Non-dividend paying firms			Dividend-paying firms	
	(1)	(2)		(3)	(4)
TAXDIF	−0.018***			−0.003	
	(−2.75)			(−0.19)	
TAXDIF3y		−0.045***			−0.036
		(−3.73)			(−1.04)
Controls	Yes	Yes		Yes	Yes
Ind-year f.e.	Yes	Yes		Yes	Yes
Firm f.e.	Yes	Yes		Yes	Yes
R^2 within	0.0832	0.0873		0.1275	0.1309
#obs.	8,007	7,594		3,564	3,458

Panel B. Clean (lower information risk) vs modified (higher information risk) audit opinion	Clean audit opinion			Modified audit opinion	
	(1)	(2)		(3)	(4)
TAXDIF	−0.017***			−0.005	
	(−3.17)			(−0.50)	
TAXDIF3y		−0.017**			−0.003
		(−2.01)			(−0.16)
Controls	Yes	Yes		Yes	Yes
Ind-year f.e.	Yes	Yes		Yes	Yes
Firm f.e.	Yes	Yes		Yes	Yes
R^2 within	0.1430	0.1438		0.1271	0.1294
#obs.	14,346	13,735		3,589	3,402

Notes: This table reports the results from firm fixed effects estimation models that examine the effect of tax avoidance on cost of debt (*COD*) for non-dividend paying firms and dividend-paying firms (Panel A) and by audit opinion: clean vs modified (Panel B). Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. *** and ** denote significance levels at two-tail tests of 1% and 5%, respectively.

SMEs, than in public corporations because of the lower level of public information available for private firms and the lower quality of their financial reporting (e.g. Carcello et al., 2009). Hence, we consider the subsample of audited firms in our sample of SMEs and classify them into modified opinions and clean opinions depending on the content of the audit report in t-1.[8] Since a clean or unqualified report means that, according to the audit opinion, the accounting standards have been properly observed, we associate unqualified reports with the firms' financial information having higher credibility. In contrast, a modified or qualified audit opinion expresses concerns of the auditor about the quality of the firm's financial statements or the lack of sufficient information about the firm when preparing the audit report. Thus, a modified audit opinion may reduce lenders' confidence in the financial reporting, thereby increasing the information risk. The results of Panel B of Table 4 show a negative and significant association between tax avoidance and the cost of debt in those firms with clean audit opinions and a non-significant association in those with modified audit opinions.

Overall, our analyses in this section show that the negative association between tax avoidance and the cost of debt is only found in SMEs with low agency costs and low information risk.

4.3.3. Change of the income tax law

In the sample period Spanish firms have been subjected to two corporate income tax laws: the consolidated text of the Corporate Tax Act (approved by the Royal Decree 4/2004) until 2014, and Act 27/2014, which entered into force in 2015. The new law introduces some new concepts which may affect tax avoidance incentives but eliminates others. For example, since the deduction of finance expenses from tax payable incentivizes the use of debt instead of equity, the new law establishes a capitalization reserve to incentivize the use of equity. This reserve substitutes the investment allowances of the previous law. Hence, in the 2004 law part of the income obtained from the disposal of fixed assets such as property, plant and equipment, investment property or intangible assets was deducted from the tax payable if this income was reinvested in the firm. However, in the 2014 law the firm has the choice of reducing the tax payable by constituting an unavailable capitalization reserve.

We examine the association between tax avoidance and the cost of debt before and after the change in corporate income tax law. Table 5 results show that a negative and significant association between tax avoidance and the cost of debt is found during the period of enforcement for both the 2004 and the 2014 laws.

4.4. OLS regressions

In the previous analyses we have estimated model (1) with firm fixed effects to control the unobservable heterogeneity. Therefore, those estimates are based on the time variation in the variables. As an additional analysis, we examine the cross-sectional relationship between tax avoidance and cost of debt by estimating model (1) with ordinary least squares (OLS). As in the firm fixed effects model, we use t-statistics based on standard errors clustered at the firm level, robust to both heteroskedasticity and within firm serial correlation (Petersen, 2009; Goh et al., 2016). As shown in Table 6, the coefficients on the four tax avoidance measures are negative and significantly associated with the cost of debt.

4.5. Control for reverse causality

The association between tax avoidance and cost of debt may be subject to endogeneity arising from potential reverse causality (Hasan et al., 2014; Beladi et al., 2018; Isin, 2018). For example, firms with higher debt cost might engage in more tax avoidance to generate cash flows and thus alleviate financing constraints. In addition, firm characteristics such as industry, size, leverage or profitability may affect the likelihood of engaging in tax avoidance activities. In this section, to address reverse causality and sample selection concerns we apply additional sensitivity tests: a propensity score matching method (Rosenbaum and Rubin, 1983; Smith and Todd, 2005) and a change analysis.

In the propensity score matching method we classify firms into tax aggressive (engage in tax avoidance) and non-tax aggressive (do not engage in tax avoidance). We identify as tax aggressive firms those firm-years with positive values of *TAXDIF* or *TAXDIF3y*, whereas we consider as non-tax aggressive firms those firm-year observations with values of *TAXDIF* or *TAXDIF3y* equal or lower than zero. Then we estimate the probability of a firm being tax aggressive/non-tax aggressive in a vector of firm characteristics by using a probit regression. These firm characteristics are size, leverage, liquidity, ROA, growth, tangibility, volatility and year-industry dummies. Next, each tax aggressive firm is matched with the closest non-tax aggressive firm based on the probability (score) obtained in the probit regression. Finally, we estimate the difference in the cost of debt between tax-aggressive (treatment group) and non-tax aggressive (control group) firm years.

Panel A of Table 7 shows the results of the probit models for *TAXDIF* and *TAXDIF3y*. Larger and more profitable firms are more likely to engage in tax avoidance, whereas more leveraged and more liquid firms, which grow more, with more tangible assets and more volatility are less likely to engage in tax avoidance.[9] Panel B of Table 7 displays the results of the average cost of debt for the treatment (tax aggressive firms) and control (non-tax aggressive firms) samples. The average cost of debt is sig-

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[8] Similar results are obtained considering audit opinion in t.

[9] The post-estimation tests show that the matching procedure is successful. The coefficients on the variables used to determine the probability of tax aggressiveness/non-tax aggressiveness are very similar in both the treatment sample (tax aggressive firms) and the control sample (non-tax aggressive firms) and there are no significant differences between them at the 5% level.

Table 5
Effect of tax avoidance on cost of debt before and after 2014 Income tax law.

	Until 2014		After 2014	
	(1)	(2)	(3)	(4)
TAXDIF	−0.009***		−0.015***	
	(−2.71)		(−3.73)	
TAXDIF3y		−0.016**		−0.022***
		(−2.17)		(−2.74)
Controls	Yes	Yes	Yes	Yes
Ind-year f.e.	Yes	Yes	Yes	Yes
Firm f.e.	Yes	Yes	Yes	Yes
R^2 *within*	26,725	25,109	19,380	10,619
#obs.	0.0629	0,0626	0.1237	0.1211

Notes: This table reports the results from firm fixed effects estimation models that examine the effect of tax avoidance on cost of debt (*COD*) before and after the implementation of the 2014 Income tax law. Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. *** and ** denote significance levels at two-tail tests of 1% and 5%, respectively.

Table 6
Effect of tax avoidance on cost of debt. OLS estimation.

	(1)	(2)	(3)	(4)
TAXDIF	−0.019***			
	(−7.19)			
TAXDIF3y		−0.022***		
		(−5.00)		
ETR			−0.021***	
			(−7.92)	
ETR3y				−0.016***
				(−5.00)
SIZE	−0.005***	−0.005***	−0.005***	−0.005***
	(−8.11)	(−6.61)	(−8.63)	(−7.45)
LEV	−0.019***	−0.020***	−0.019***	−0.020***
	(−7.81)	(−6.90)	(−7.90)	(−7.04)
INTCOV(x10²)	−0.012***	−0.011***	−0.012***	−0.011***
	(−3.71)	(−3.62)	(−3.71)	(−3.64)
LIQ	−0.001*	−0.001*	−0.001*	−0.001
	(−1.66)	(−1.65)	(−1.66)	(−1.61)
ROA	0.023	0.005	0.022	0.006
	(1.53)	(0.33)	(1.45)	(0.39)
GROW	0.008***	0.009***	0.008***	0.008***
	(5.24)	(4.93)	(5.34)	(4.93)
TANG	−0.042***	−0.046***	−0.046***	−0.046***
	(−25.50)	(−22.77)	(−25.43)	(−23.28)
ROAVLT	0.066***	0.087***	0.066***	0.073***
	(3.63)	(3.21)	(3.62)	(3.14)
AUDIT	−0.002**	−0.002*	−0.002**	−0.002**
	(−2.06)	(−1.80)	(−2.28)	(−2.25)
Intercept	0.137***	0.137***	0.133***	0.135***
	(23.71)	(19.88)	(22.67)	(19.90)
Ind. dum.	Yes	Yes	Yes	Yes
Year dum.	Yes	Yes	Yes	Yes
R^2 *adj*	0.1430	0.1217	0.1434	0.1210
#obs.	46,105	35,728	46,105	37,198

Notes: This table reports the results from OLS estimation models that examine the effect of tax avoidance on cost of debt (*COD*). Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. ***, **, and * denote significance levels at two-tail tests of 1%, 5%, and 10%, respectively.

nificantly (at the 1% level) lower in the tax aggressive firm group. This confirms our hypothesis that tax avoidance reduces the cost of debt for SMEs.

As a final robustness check, to better assess the causality from tax avoidance to cost of debt we regress the annual change in the cost of debt on the annual change in tax avoidance. In Table 8, Panels A and B show the findings for the firm fixed effects and OLS estimations, respectively, of a modified version of model (1) regressing the change in the cost of debt from t-1 to t on the change in tax avoidance measures from t-1 to t. We find that an increase in tax avoidance is significantly asso-

Table 7
Propensity score matching.

Panel A: Probit regression to tax aggressive firms vs non-tax aggressive firms		
	TAXDIF	TAXDIF3y
SIZE	0.308***	0.339***
	(39.43)	(37.63)
LEV	−0.369***	−0.323***
	(−8.93)	(−6.85)
LIQ	−0.0485***	−0.037***
	(−6.12)	(−4.38)
ROA	5.466***	3.621***
	(26.37)	(14.87)
GROW	−0.154***	−0.118***
	(−3.85)	(−2.60)
TANG	−0.061*	−0.059
	(−1.83)	(−1.52)
ROA_VLT	−0.668	2.210***
	(−1.62)	(4.03)
Intercept	−2.028***	−2.827***
	(−7.86)	(−10.71)
Ind-year f.e.	Yes	Yes
Pseudo R^2	0.0921	0.0852
#obs.	46,102	35,714
Panel B. Propensity score matching using COD		
Var: COD_t	TAXDIF	TAXDIF3y
Tax aggressiveness	0.05287	0.05664
Non-tax aggressiveness	0.05534	0.05902
Difference	−0.00257	−0.00238
t-stat	−3.78***	−2.91***

Notes: This table reports the results from propensity matching score estimation models that examine the effect of tax avoidance on cost of debt. Panel A reports the estimation of the propensity score using a probit regression model with the tax aggressiveness/non-tax aggressiveness as the dependent variable. We define tax aggressive firms those firm-years observations with positive values of *TAXDIF* or *TAXDIF3y*, while those with negative or zero values of *TAXDIF* or *TAXDIF3y* are considered non-tax aggressive firms. Panel B reports the results of the average cost of debt for the treatment (tax aggressiveness) and control sample (non-tax aggressiveness). Variable definitions are in Table 1. ***, **, and * denote significance levels at two-tail tests of 1%, 5%, and 10%, respectively.

ciated with a decrease in the cost of debt. These results are consistent with those previously reported, showing a negative association between tax avoidance and the cost of debt.[10]

5. Conclusions

In this study, we examine the effect of tax avoidance on the cost of debt for SMEs. Our analyses reveal that SMEs that engage in tax avoidance activities face a lower cost of debt. Our findings are in line with those papers which provide evidence consistent with the idea that tax avoidance enhances firm credit quality, such as Lim (2011) and Kovermann (2018). In additional analyses, we show that our results are not contingent on firm size or profitability nor by the two different income tax laws in force in Spain during the sample period. However, they are stronger for firms that do not pay dividends and whose audit report is clean. These results suggest that the association is affected by agency costs and information risk. Overall, our findings suggest that lenders to SMEs, i.e. banks, conclude that the benefits of tax avoidance outweigh its costs when agency costs are low and the quality of financial information is high.

This study contributes to the line of research on the economic consequences of tax avoidance. We provide the first empirical evidence regarding the association between tax avoidance and the cost of debt for SMEs. Our findings are relevant to both regulators and SME managers. Concerning regulators, our results constitute an empirical support to the special tax rules which are designed to aid SMEs reduce their tax burden and to incentivize their growth and profitability (OECD, 2015). Our results confirm that the tax avoidance practices implemented by SMEs, mainly based on the application of these special tax programs (i.e., tax deductions, credits or exemptions) have positive effects on the cost of SME debt financing. In similar regulatory contexts, our findings might encourage SME managers to engage in legally-accepted tax avoidance to overcome the usual financial constraints of these types of firms. Thus, tax avoidance would lead SMEs to both increase internally generated funds via tax-savings and access to bank financing at lower interest rates.

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[10] To mitigate endogeneity concerns other methods, such as an external shock, may be implemented. We have also considered these alternatives but they are not feasible with our sample data. For instance, since the regulatory change in the Income tax that took place in 2014 did not involve a substantial change in the incentives to engage in tax avoidance, it cannot be considered an exogenous event that leads to changes in the tax avoidance behaviour of firms. Despite these limitations, the implemented analyses of firm fixed effects, propensity score matching and change analysis suggest that our results are robust to endogeneity.

Table 8
Effect of change in tax avoidance on change in cost of debt.

Panel A: Firm fixed effects estimation				
	(1)	(2)	(3)	(4)
$\varDelta TAXDIF$	−0.010***			
	(−3.13)			
$\varDelta TAXDIF3y$		−0.021***		
		(−2.66)		
$\varDelta ETR$			−0.010***	
			(−3.21)	
$\varDelta ETR3y$				−0.014***
				(−2.67)
Controls.	Yes	Yes	Yes	Yes
Ind-year f.e	Yes	Yes	Yes	Yes
Firm f.e.	Yes	Yes	Yes	Yes
R^2 within	0.0458	0.0464	0.0459	0.0469
#obs.	29,378	25,493	29,378	26,263
Panel B: OLS estimation				
	(1)	(2)	(3)	(4)
$\varDelta TAXDIF$	−0.011***			
	(−3.76)			
$\varDelta TAXDIF3y$		−0.019***		
		(−3.00)		
$\varDelta ETR$			−0.010***	
			(−3.67)	
$\varDelta ETR3y$				−0.010***
				(−2.95)
Controls.	Yes	Yes	Yes	Yes
Ind. dum.	Yes	Yes	Yes	Yes
Year dum.	Yes	Yes	Yes	Yes
R^2 adj	0.0279	0.0288	0.0279	0.0287
#obs.	29,378	25,493	29,378	26,263

Notes: This table reports the results from a version of model (1) where the dependent variable is the year-on-year change in the cost of debt ($\varDelta COD$) and the independent variable of interest is the year-on-year change in each proxy for tax avoidance. Panel A shows the results using firm fixed effects estimation and Panel B those from OLS estimations. Variable definitions are in Table 1. The *t* statistics reported in parentheses are based on standard errors clustered at the firm level. ***, **, and * denote significance levels at two-tail tests of 1%, 5%, and 10%, respectively.

Author contributions

Both authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Juan Pedro Sánchez-Ballesta and José Yagüe. The first draft of the manuscript was written by both authors, and they read and approved the final manuscript.

Data availability

The authors do not have permission to share data.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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