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Audit fees and cost of debt: differences in the credibility of voluntary and mandatory audits

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ABSTRACT

Despite the extensive research on audit fees, few studies have examined the effect of audit fees on the cost of debt. Based on the credence goods theory, we examine whether the effect of audits on the cost of debt is affected by the type of audit (voluntary or mandatory) and the audit fees, as well as whether there is a combined effect of voluntary audits and audit fees, so that the effect of voluntary audits on the cost of debt is affected by audit fees. Using a sample of Spanish SMEs, we find an asymmetric effect of audit fees on the cost of debt: higher audit fees are associated with a lower cost of debt for voluntarily audited companies, while the association is not significant for mandatory audits. Results suggest that, although the type of audit and the audit fees do not have a direct effect on the credibility of audits, the combination of both factors has relevance for lenders, so that higher audit fees in the voluntary setting are positively valued by them. The study contributes to the literature on auditing by showing that voluntary audits are relevant for capital providers as long as audits are perceived of quality.

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1. Introduction

Despite the extensive research about audit fees, there are few studies that have examined the effect of audit fees on the credibility of accounting information and on the cost of debt, and the evidence is mixed (Dhaliwal, Gleason, Heitzman, & Melendrez, 2008; Jiang & Zhou, 2017). Furthermore, in spite of the assumed idea that audits help to enhance the credibility of accounting information, the empirical evidence on the association between voluntary audits and the cost of debt is mixed (Huguet & Gandía, 2014; Lennox & Pittman, 2011). We consider that the credibility of voluntary audits may depend on the audit fees paid by the auditee. Therefore, this study states whether the association between the cost of debt and voluntary audits can be affected by the fees paid to auditors. Particularly, we consider whether, in the voluntary audit

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setting, there are differences in the perception of audit quality by users, or in their signalling effect, based on the fees paid to auditors.

Based on the credence goods theory (Dulleck & Kerschbamer, 2006), and considering the previous evidence on the audit fee premium observed among voluntary audits (Gandía & Huguet, 2018) we state that audits, as credence goods (Causholli & Knechel, 2012; Esplin, Jamal, & Sunder, 2018; Hay & Knechel, 2010; Knechel, Niemi, & Sundgren, 2008), use price to signal quality. Since lenders cannot a priori ascertain the quality of the audit, they may not rely on audited financial statements when companies are voluntarily audited. Nevertheless, if companies seek to signal a true commitment with accounting quality, they will be willing to pay for it, and thus audit fees may help companies to signal this commitment, what may enhance the credibility of their financial statements, thus reducing their cost of debt.

Small and Medium Enterprises (SMEs) are a natural setting to test the effect of voluntary audits, since voluntary audits are only observable in this setting in the European Union (EU), because big private companies and listed companies are mandatorily audited. Furthermore, this setting is also useful to compare differences between voluntary and mandatory audits, because part of them are required to be audited, whereas other companies are exempt from the audit requirement. Also, given the rather limited use of accounting information by lenders on the SMEs setting (Gill de Albornoz Noguer & Illueca, 2007), the role of auditors should be examined in depth. On the other hand, the Spanish case may shed light on the role of voluntary audits, for several reasons. First, Spain has a relatively short history of auditing, and there is a lower tradition in the use of accounting information compared to common-law countries. Secondly, SMEs have a great importance on the Spanish economy. Finally, the Spanish Statutory Audit Thresholds (SAT) are lower than those generally applied in the EU, so letting us compare voluntary and mandatory audits in a relatively homogeneous sample.

Therefore, the aim of this paper is to empirically examine whether the effect of audits on the cost of debt is affected by the type of audit (voluntary or mandatory) and the audit fees, as well as whether there is a combined effect of voluntary audits and audit fees, so that the effect of voluntary audits on the cost of debt is affected by audit fees. To do this, we use a sample of Spanish SMEs, in which we include both voluntarily and mandatorily audited companies, and we posit a linear regression model, estimated using fixed effects, in which we analyse the effect of the explanatory variables (if audit is voluntary or mandatory; audit fees; and the interaction term of both variables) and a series of control variables commonly used in the literature, on the cost of debt.

Results show that, although voluntary audits are charged with a higher cost of debt compared to mandatory audits, higher audit fees are associated with a lower cost of debt for voluntarily audited companies, while there is not a significant effect of audit fees on the cost of debt for mandatory audits, suggesting an asymmetric effect of audit fees on the cost of debt which depends on the type of audit. Results remain unchanged after the inclusion of auditor-type variables (Big 4, Middle-Tier auditors and small auditors) and the inclusion of the cost of debt lagged one period as a control variable, and the use of abnormal audit fees, rather than actual fees, reports qualitatively similar results. These results suggest that, although voluntary audits are not *per se* more credible than mandatory audits, the audit fees paid by voluntarily audited companies are

positively valued by debt capital providers. These results are linked to prior literature that shows an audit fee premium for voluntary audits as compared to mandatory audits, what is related with the signalling effect of price for credence goods.

We have to note that audit-based studies may present endogeneity problems, as both the auditor choice and the audit decision are not a random assignment but a corporate decision, so ordinary least squares estimations may be affected by a self-selection bias. We tackle this issue using fixed-effects regressions, which have been previously used in the literature and partially mitigates the endogeneity problems. Nevertheless, we have to admit that it does not completely solve the problem as long as the causal relation between the cost of debt and audit can be bidirectional.

Results are of relevance for accounting and auditing practitioners, since they show that voluntary audits are relevant for capital providers, in the extent that voluntary audits are perceived of quality. In that sense, auditees need to signal their commitment with accounting quality not only through the appointment of audits, but with their willingness to pay for services of quality. On the other hand, auditors need to protect the association price/quality through the performance of high quality services. Results are also of relevance for managers, who are in charge of the preparation of the financial statements of the companies and have to look out for the credibility and reputation of the company, including the financial information.

The study contributes to the previous literature by examining how audit fees affect the credibility of voluntary and mandatory audits, showing that the relevance of price to signal audit quality is asymmetric and depends on the type of audit. In that sense, the study extends and complements research on the association between audit fees with audit's perceived quality and credibility. This study also contributes to the scant literature about the role of audits on SMEs and its consequences, especially voluntary audits. In that sense, this is the first study that examines whether there are differences on the association between audit fees and perceived quality based on the comparison of voluntary and mandatory audits.

The rest of the paper is organized as follows: in [Section 2](#) we review prior literature and develop our research hypotheses; [Section 3](#) describes the sample and explains the research design; in [Section 4](#) we present the results of the analysis; and [Section 5](#) presents our conclusions and the limitations of the study.

2. Theoretical framework

2.1. Voluntary audits and cost of debt

Previous literature has examined the association between voluntary audits and the cost of debt, and the evidence is mixed. On the one hand, some studies have found a significant association between voluntary audits and the cost of debt (Dedman & Kausar, 2012; Kim, Simunic, Stein, & Yi, 2011; Lennox & Pittman, 2011; Minnis, 2011), which is linked to the information role of auditors, and the signalling effect that voluntary audits have for lenders, increasing the credibility of financial information. In that sense, Lennox and Pittman (2011) and Dedman and Kausar (2012) examine the effects of the change from mandatory to voluntary audits in the UK, and they find evidence that companies that continued being audited in the voluntary

setting obtained upgrades to their credit ratings, whereas companies that chose to opt out of the audits suffered downgrades on them. On the other hand, Kim et al. (2011) find that voluntarily audited companies have a significantly lower cost of debt than non-audited companies in a sample of Korean SMEs, results that are similar to those obtained by Minnis (2011), who examines the role of the auditor in the voluntary setting of US private companies and finds that audits help to reduce the cost of debt, because lenders place more weight on financial information.

Evidence from these papers support the hypothesis that voluntary audits have a signaling effect over mandatory audits, what lets lenders perceive the commitment of auditees with accounting quality. Moreover, Minnis (2011) finds that the increased credibility of financial information for voluntarily audited companies is due to the increase of the actual accounting quality, and accruals from audited financial statements are better predictors of future cash flows and thus more informative. In this line, Dedman and Kausar (2012) find that voluntarily audited companies report more conservative financial statements.

Nevertheless, other papers have not found a significant association between voluntary audits and the cost of debt (Allee & Yohn, 2009; Cassar, Ittner, & Cavalluzzo, 2015; Huguet & Gandía, 2014). While Allee and Yohn (2009) and Cassar et al. (2015) do not find that voluntary audits have a significant effect on the cost of debt, Huguet and Gandía (2014) only find a significant effect when companies are mandatorily audited, suggesting an asymmetric effect of audit on the cost of debt. We have to note that these studies examine voluntary audits on the SMEs setting. In these companies, the usefulness of accounting information is not clear, because lenders rely more on other information sources (Berger & Udell, 2006; Gill de Albornoz Nogueer & Illueca, 2007; Huguet & Gandía, 2014). Furthermore, lenders may perceive that voluntary audits are not credible. Daske, Hail, Leuz, and Verdi (2013) find that some companies adopt voluntarily IAS/IFRS but do not make material changes to their financial reporting. Similarly, some companies may choose to be voluntarily audited in order to pretend higher perceived accounting quality, and thus lenders may request other signals to rely on voluntary audits, an issue that we develop in Section 2.3.

Therefore, if accounting is not the main information source, lenders may not value whether companies choose to be voluntarily audited, either because they do not consider that accounting information is useful or because they do not rely on it. Since the effect of voluntary audits on the cost of debt is not clear, we cannot state whether there are differences on the cost of debt between voluntary and mandatory audits, so we formulate the hypothesis in null form:

H1: The cost of debt is not significantly different for voluntarily and mandatorily audited SMEs.

2.2. The effect of audit fees on the cost of debt

There are few papers that have examined the association between audit fees and the cost of debt (Dhaliwal et al., 2008; Jiang & Zhou, 2017). This association may be linked to both credibility matters of auditors, and its monitoring role. On the one hand, a positive effect of audit fees on the cost of debt can be expected: high audit fees may be perceived as affecting auditor independence, because of an economic

bond between auditor and auditee. If lenders perceive that auditor independence is jeopardised, credibility of both the audit and financial statements is impaired, thus increasing the cost of debt.

On the other hand, theory suggests that demand for audit increases as agency problems rise (DeFond & Zhang, 2014; Esplin et al., 2018). In that sense, higher audit fees may be perceived as the result of a more effective monitoring by the auditor, and a consequence of the audit effort (more work hours) and the auditor experience (higher fees per hour), what involves a mitigation of agency costs, and a decrease in the financing costs.

Considering these arguments, Dhaliwal et al. (2008) use a sample of 560 new debt issues to examine the association between auditor fees (both audit and non-audit fees) and the cost of debt. The authors find evidence of a positive association between non-audit fees and the cost of debt. They also find that the association between earnings and the cost of debt rises as audit fees rise, what suggests that investors perceive profitability, based on accounting numbers, as less reliable when audit fees are high.

In a recent study, Jiang and Zhou (2017) examine the impact that debt covenant violations have on audit fees, and they find evidence that companies that have recently violated a covenant pay more for audit services during the violation year and until three years later. This rise in the audit fees is linked to the increase in the demand for audit services. Furthermore, the authors state the hypothesis that the additional increase in auditor verification helps to control agency costs in debt contracts, mitigating the impact that debt covenant violations have on the cost of debt, and they find empirical evidence that supports this hypothesis.

Considering the mixed evidence on the effect of audit fees on the cost of debt, we should ask what of these effects is prevalent in the SMEs setting. In that sense, if audit fees are perceived as a higher commitment on accounting quality, or a sign of an economic bond between auditor and auditee and thus serious concerns about auditor independence, is an open question. On the one hand, considering that audits are credence goods, for which price signals quality, we can expect that (both mandatorily and voluntarily) can sign their commitment with audit quality via audit fees, and thus the association should be negative. On the other hand, given that most private companies are audited by small audit firms (Mareque, López-Corrales, & Pedrosa, 2017), whose reputation concerns are lower than those of the Big 4 and Middle-Tier auditors (Cano, 2010; DeAngelo, 1981; Francis & Wang, 2008) and whose income may be more dependent on some core clients, the economic bond theory is also a plausible hypothesis. We can even consider a third possibility, for which lenders do not matter about audit fees because of the rather limited usefulness of accounting information for lenders in the SMEs setting. Therefore, we formulate Hypothesis 2 in null form:

H2: There is not a significant association between audit fees and the cost of debt on SMEs.

2.3. Audit fees and the credibility of voluntary audits

In addition to the lack of research about the association between audit fees and the cost of debt explained in Section 2.2, we have to note that there is no research about the combined effect of voluntary audits and audit fees. Nevertheless, we can expect

that audit fees play a role when examining the association between voluntary audits and the cost of debt, because higher audit fees may add credibility to the commitment of voluntarily audited companies.

We have to note that audits are credence goods (Causholli & Knechel, 2012; Esplin et al., 2018; Hay & Knechel, 2010; Knechel et al., 2008), the main feature of them is that the consumer cannot ascertain either the quality of the good or the need for it, and thus price is often the only possible indicator of quality on credence goods (Dulleck & Kerschbamer, 2006; Hay & Knechel, 2010). As we stated in Section 2.1, lenders may not rely on voluntary audits because some companies may pretend to feign a commitment with accounting quality when they do not really have it. Therefore, if voluntarily audited companies seek to signal a commitment with accounting quality, they should be willing to pay for it, while companies that only want to increase the 'perceived' accounting quality but do not have a true commitment with it will choose 'low-cost' audits. In that sense, Gandía and Huguet (2018) find that voluntary audits are charged with a premium as compared to mandatory audits. This premium is linked to the signalling value of price to show a true commitment with accounting quality, as opposed to the 'low-cost' auditors engaged by 'passively compliant' companies which are required to be audited.

Since we expect that higher audit fees among voluntary audits may help auditees to signal their commitment with accounting quality and to enhance their credibility, we formulate the following hypothesis:

H3: There is a negative association between audit fees and the cost of debt on voluntarily audited SMEs.

3. Empirical study

3.1. Sample and descriptive statistics

For the selection of the sample we have use SABI, a database that contains corporate information from financial statements of Spanish companies. Our sample period runs from 2010 to 2017. We initially selected data from audited private companies that have been, for the period 2010–2017, below the maximum thresholds established by the Directive 2013/34/EU to consider a company is small. According to the Directive, small companies are defined as those which on their balance sheet dates do not exceed at least two out of the following thresholds: €6,000,000 for the total assets; €12,000,000 for the net turnover; and 50 employees.

The Directive states that small companies are not required to be audited. Nevertheless, most EU countries apply lower Statutory Audit Thresholds (SAT). In Spain, private companies are not required to be audited if they do not exceed two out of three criteria for two consecutive years: €2,850,000 for the total assets; €5,700,000 for the net turnover; and 50 employees. We have to note that these SAT do not currently meet with those used in Spain to define a company as a SME¹ (which are in line with those considered as the standard ones in the Directive 2013/34/UE, €4,000,000 for the total assets, €8,000,000 for the net turnover, and 50

employees). Therefore, the use of the maximum EU limits, which are higher than the Spanish SAT and the Spanish thresholds to consider a company a SME, involves that our sample is composed of companies below Spanish SAT (voluntarily audits) and above SAT (mandatory audits), and thus it lets us compare mandatory and voluntary audits, avoiding an excessive variation in company size within the sample. We have to note that, although companies below SAT are exempt from audit by size criteria, they are required to be audited in certain conditions.

Specifically, listed companies, companies that issue bonds in public offering, financial and insurance companies, and companies that receive grants or provide goods and services to the Public Administration (above the limits established by the Government) are mandatorily audited. Furthermore, when shareholders that represent at least the 5% of the share capital request for an audit, the company is also mandatorily audited. However, since SABI does not include information about the reason a company is audited, we cannot state whether audited companies below SAT are mandatory audits. Nevertheless, we have to note that some of the mandatory cases (listed companies, companies that issue bonds in public offering, and financial companies) are excluded through our sample selection process. On other hand, since companies that receive grants or provide goods and services to the Public Administration above the Government thresholds have a significant size, they are probably mandatorily audited because of the size thresholds. Therefore, our assumption that companies below SAT are voluntarily audited is plausible.

Observations from companies in financial and insurance industries and firms having unlimited liability are excluded. Furthermore, we eliminate observations that have no information to calculate the financing costs, observations with missing data about audit fees, and observations with negative values for assets, liabilities or financing expenses. In order to alleviate the influence of outliers, the proxy for the cost of debt was truncated at percentiles 5-95, and the rest of continuous variables are truncated at percentiles 1-99.

Table 1 shows the sample distribution. As we can see in Panel A, the final sample has 19,950 observations from 5,529 companies, with 1,748 observations from companies below SAT (and thus a priori voluntarily audited) and 18,202 observations from companies which are mandatorily audited. We have to note that voluntary audits in Spain represent 29 percent of total audits (Instituto de Contabilidad y Auditoría de Cuentas, 2018). Considering that the sample percentage is lower, we can assume that our assumption for voluntary audits (observations below SAT) is not overstating the proportion of voluntary audits. Panel B shows the sample distribution of the audited SMEs by auditor choice (Big 4/Middle-Tier/rest of auditors). We have to note the low proportion of companies audited by large auditors, although the proportion of companies which are audited by Big 4 or Middle-Tier auditors is higher among voluntary audits than for mandatory audits.

Table 2 shows the descriptive statistics of the continuous variables. We observe that, on average, voluntarily audited companies have a lower cost of debt, are smaller, report lower profitability and leverage, have higher liquidity and solvency ratio, show a higher growth rate, and pay lower fees.

Table 1. Sample distribution.**Panel A:** Sample distribution by audit status

Year	Voluntary Audits		Mandatory Audits		Total
2010	164	5.41%	2,866	94.59%	3,030
2011	238	8.26%	2,644	91.74%	2,882
2012	295	9.45%	2,828	90.55%	3,123
2013	260	8.71%	2,725	91.29%	2,985
2014	240	10.70%	2,002	89.30%	2,242
2015	240	11.15%	1,912	88.85%	2,152
2016	181	9.64%	1,696	90.36%	1,877
2017	130	7.84%	1,529	92.16%	1,659
Total	1,748	8.76%	18,202	91.24%	19,950

Panel B: Sample distribution by auditor choice

Year	Small Auditors	Middle-Tier Auditors	Big Auditors	Total
2010	2,769	131	130	3,030
2011	2,620	123	139	2,882
2012	2,866	93	164	3,123
2013	2,728	93	164	2,985
2014	2,041	65	136	2,242
2015	1,969	60	123	2,152
2016	1,726	48	103	1,877
2017	1,518	44	97	1,659
Total	18,237	657	1,056	19,950
Voluntary Audits	1506	78	164	1,748
	86.16%	4.46%	9.38%	(100.00%)
Mandatory Audits	16,731	579	892	18,202
	91.92%	3.18%	4.90%	(100.00%)
Total	18,237	657	1,056	19,950
	(91.41%)	(3.29%)	(5.29%)	(100.00%)

Source: Authors' own estimations.

3.2. Research design

We test the hypotheses with the following models:

$$COST_D_{it} = \alpha + \beta_1 VOL_{it} + \beta_2 LNFEES_{it} + \beta_3 INTER_{it} + \gamma_4 CONTROL_{it} + \varepsilon_{it} \quad (1a)$$

$$COST_D_{it} = \alpha + \beta_1 VOL_{it} + \beta_2 LNFEES_{it} + \beta_3 INTER_{it} + \beta_3 LARGE_{it} + \beta_3 BIG_{it} + \gamma_4 CONTROL_{it} + \varepsilon_{it} \quad (1b)$$

The dependent variable in both models is the cost of debt paid by the companies ($COST_D$). Since this variable is not directly observable, we estimate a proxy, which is calculated as the ratio between the interest paid and the average financing debt between the beginning and the end of the year. We are aware that, although this variable is commonly used as a proxy for the cost of debt, it involves several limitations (Cassar, 2011; Huguet & Gandía, 2014). First, the variable is a noisy measure of the cost of debt because it considers the average level of debt rather than the specific loans. We eliminate outliers at percentiles 5-95 in order to mitigate this limitation (Huguet & Gandía, 2014; Vander Bauwhede, De Meyere, & Van Cauwenberge, 2015). A second limitation is related with the 'staleness' of the variable, in the sense that a portion of the observed interest rate is due to contracts from previous years (Cassar, 2011). The inclusion of the same variable lagged one period as a control variable can

Table 2. Descriptive statistics.

Panel A: Distributional properties (19,950 observations)							
Variable	Mean	S. Dev.	1%	25%	50%	75%	99%
COST_D	0.0466	0.0229	0.0138	0.0293	0.0424	0.0588	0.1173
COST_D_LAG	0.0490	0.0222	0.0150	0.0327	0.0451	0.0605	0.1177
LNASS	8.8101	0.5158	7.7765	8.4576	8.7783	9.1128	10.3165
ROBA	0.0616	0.0700	-0.1392	0.0276	0.0550	0.0913	0.2801
LEV	0.3022	0.1721	0.0212	0.1638	0.2878	0.4233	0.7251
LIQ	1.6853	0.9990	0.4598	1.0977	1.3898	1.9389	5.8074
TAN	0.2529	0.1846	0.0047	0.1022	0.2189	0.3675	0.7818
GROWTH	0.0009	0.1902	-0.4703	-0.1040	0.0010	0.0980	0.5662
SOLV	1.9327	0.9329	1.0359	1.3345	1.6318	2.1821	5.6984
COV	7.8914	18.2502	-11.6970	1.2810	2.6082	7.4597	97.8000
AGE	23.5645	10.8823	5.0000	16.0000	22.0000	30.0000	57.0000
LNFEES	1.9878	0.3449	1.2238	1.7579	1.9678	2.2083	2.8622

Panel B: Mean and standard deviation of variables by audit status

Variable	Voluntary Audit (1,748 observations)		Mandatory Audit (18,202 observations)		Test for mean differences	
	Mean	Std. Dev.	Mean	Std. Dev.	Diff	t
COST_D	0.0458	0.0226	0.0467	0.0230	-0.0009	-1.50*
COST_D_LAG	0.0480	0.0222	0.0491	0.0222	-0.0011	-1.89***
LNASS	8.5482	0.6753	8.8353	0.4905	-0.2871	-22.51***
ROBA	0.0423	0.0742	0.0634	0.0693	-0.0211	-12.09***
LEV	0.2963	0.1753	0.3028	0.1718	-0.0066	-1.52*
LIQ	1.8934	1.2108	1.6653	0.9739	0.2280	9.13***
TAN	0.2890	0.2114	0.2494	0.1815	0.0396	8.58***
GROWTH	0.0162	0.2025	-0.0006	0.1889	0.0168	3.53***
SOLV	2.2015	1.1166	1.9068	0.9092	0.2946	12.66***
COV	5.8507	17.1865	8.0873	18.3376	-2.2367	-4.90***
AGE	24.3764	11.2048	23.4865	10.8480	0.8899	3.27***
LNFEES	1.8629	0.3508	1.9998	0.3420	-0.1370	-15.96***

COST_D: Cost of debt; COST_D_LAG: Cost of debt lagged one period; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company; LNFEES: Natural logarithm of audit fees.

***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Source: Authors' own estimations.

mitigate this problem (Cano Rodríguez et al., 2016), so we do an additional analysis including this variable.

Model [1a] includes *VOL*, a dummy which equals 1 when a company is below SAT and thus a priori voluntarily audited, and 0 for mandatory audits, and tests whether the cost of debt is different depending on whether audits are voluntary or mandatory, i.e. to test Hypothesis 1. Model [1a] also includes *LNFEES*, which is the natural logarithm of the audit fees paid by the company, and it is used to test Hypothesis 2. Finally, with the aim of testing Hypothesis 3, we include the interaction term between *VOL* and *LNFEES* (*INTER*). This variable capture if the association between *LNFEES* and *COST_D* is different depending on whether the audit is voluntary or mandatory. Since *VOL* is a dummy variable, *INTER* is 0 for mandatorily audited companies, while is equal to *LNFEES* for voluntary audits. Therefore, the effect of audit fees for mandatory audits is observed from β_2 , while $\beta_2 + \beta_3$ shows the effect of audit fees for voluntary audits.

We include in the model a set of control variables used in previous empirical research, all of them lagged one period with *COST_D*. Prior literature shows that

larger firms are considered to be less risky than small companies (Huguet & Gandía, 2014; Vander Bauwhede et al., 2015), so we include the natural logarithm of the total assets as a proxy for the company size (*LNASS*). We also include the Return on Business Assets (*ROBA*) to control for the firm performance (Kim et al., 2011). Following Huguet and Gandía (2014), we also include the leverage (*LEV*) and its squared term (*LEV_SQ*). Liquidity ratio (*LIQ*), solvency ratio (*SOLV*) and coverage ratio (*COV*) are included to control for the association of the financial soundness of the company with its financing costs. We also include the variable tangibility (*TAN*), defined as the ratio of PP&E to total assets, since a negative association between the level of PP&E and the cost of debt is expected (Gill de Albornoz Noguer & Illueca, 2007; Kim et al., 2011). Company growth is included to control for its potential effects on the cost of debt (Kim et al., 2011; Cano Rodríguez & Sánchez Alegría, 2012). We also include the age of the company (*AGE*) because older companies are perceived to be less risky (Lennox & Pittman, 2011; Vander Bauwhede et al., 2015). Finally, we include year dummies to control for unobserved and time-specific effects.

With regard to Model [1b], previous literature has considered that the auditor choice may affect the cost of debt (Karjalainen, 2011; Pittman & Fortin, 2004). Nevertheless, papers on the SMEs setting have not found a significant association between these variables (Huguet & Gandía, 2014; Kim et al., 2011). For this reason, Model [1b] complements Model [1a] by including two proxies for auditor choice: *LARGE*, which equals 1 for companies audited by a Big 4 or a Middle-Tier firm and 0 otherwise; and *BIG*, which equals 1 for companies audited by a Big 4 auditor and 0 otherwise. Following prior literature (Boone, Khurana, & Raman, 2010; Gandía & Huguet, 2018; Sundgren & Svanström, 2013), we have considered BDO and Grant Thornton as Middle-Tier firms.

Previous literature has shown that the use of audit-based variables is often affected by endogeneity problems (Cano Rodríguez & Sánchez Alegría, 2012; Huguet & Gandía, 2014; Kim et al., 2011). Although some papers try to mitigate the endogeneity problems using a Heckman two-stage approach (Pittman & Fortin, 2004; Cano Rodríguez et al., 2016), literature shows that Heckman results depend on a proper selection of the instrumental variables, and results lack on robustness, being even more biased and unreliable than OLS estimations (Clatworthy, Makepeace, & Peel, 2009; Larcker & Rusticus, 2010; Lennox, Francis, & Wang, 2012). Some authors (Francis, 2011; Lennox et al., 2012; Wintoki, Linck, & Netter, 2012) suggest that the use of a fixed-effects (FE) regression can mitigate the potential self-selection bias and omitted variables problems as long as the unobserved source of endogeneity is time-invariant, and this approach has been used by previous literature (Huguet & Gandía, 2016; Kim et al., 2011; Zaman Groff, Trobec, & Iglícar, 2017). For this reason, we estimate Equations (1a) and (1b) using a firm FE regression procedure. Furthermore, as stated by Wintoki et al. (2012), endogeneity problems can also be mitigated to the extent that the test and control variables are lagged one period.

On the other hand, we have to note that the association between audit fees and the cost of debt may not be really significant, and thus we should observe the association between the cost of debt and *abnormal* fees, i.e. the differences between the actual fees and the *normal* fees should be paid, according to the company

characteristics. For this reason, we reformulate Models [1a] and [1b] by replacing *LNFEES* with *AB_LNFEES*. To do so, we first need to calculate *AB_LNFEES*, so we have to calculate the expected audited fees, which are estimated by regressing the following regression model:

$$\begin{aligned}
 LNFEES_{it} = & \alpha + \beta_1 LARGE_{it} + \beta_2 BIG_{it} + \beta_3 LNASS_{it} + \beta_4 LNSAL_{it} + \beta_5 LNEMP_{it} \\
 & + \beta_6 INVREC_{it} + \beta_7 ACQ_{it} + \beta_8 INT_ASS_{it} + \beta_9 UNUS_{it} + \beta_{10} SIMP_GAAP_{it} \\
 & + \beta_{11} NUM_SUBS_{it} + \beta_{12} GROUP_{it} + \beta_{13} LEV_{it} + \beta_{14} CH_{LEV_{it}} + \beta_{15} GROWTH_{it} \\
 & + \beta_{16} ROBA_{it} + \beta_{17} NEG_{EARN_{it}} + \beta_{18} NEG_{ROBA_{it}} + \beta_{19} CURRENT_{it} \\
 & + \beta_{20} QUICK_{it} + \beta_{21} SOLV_{it} + \beta_{22} CH_{SOLV_{it}} + \beta_{23} MOD_{it} + \beta_{24} YEAR_{END_{it}} \\
 & + \beta_{25} C_{CITY_{it}} + \beta_{26} AGE_{it} + \gamma_1 DUMMY_IND_{it} + \gamma_2 DUMMY_YEARS + \varepsilon_{it}
 \end{aligned}
 \tag{2}$$

The model estimates a linear regression in which *LNFEES* is function of a series of determinants of audit fees, which have been tested by previous literature (Gandía & Huguet, 2018; Zaman Groff et al., 2017) and control for auditor size, company size (natural logarithm of total assets, natural logarithm of net turnover and natural logarithm of number of employees), company complexity (proportion of inventory and receivables over total assets, acquisitions, proportion of intangibles, reporting of unusual items in the income statement, use of simplified GAAP, number of subsidiaries, and whether the company belongs a group), company risk (leverage, changes in leverage, company growth, profitability, presence of negative earnings, interaction between profitability and negative earnings, current ratio, quick ratio, solvency ratio and changes in the solvency ratio), presence of modified audit reports, year-end date, if the company is located in Madrid or Barcelona, and the age of the company. The model also includes year and industry dummies. *AB_LNFEES* is calculated as the difference between *LNFEES* and the fitted values of the regression model.

$$COST_D_{it} = \alpha + \beta_1 VOL_{it} + \beta_2 AB_LNFEES_{it} + \beta_3 INTER_AB_{it} + \gamma_4 CONTROL_{it} + \varepsilon_{it}
 \tag{3a}$$

$$\begin{aligned}
 COST_D_{it} = & \alpha + \beta_1 VOL_{it} + \beta_2 AB_LNFEES_{it} + \beta_3 INTER_AB_{it} + \beta_3 LARGE_{it} + \beta_3 BIG_{it} \\
 & + \gamma_4 CONTROL_{it} + \varepsilon_{it}
 \end{aligned}
 \tag{3b}$$

4. Results

4.1. Main results

This Section presents the FE regression results of Models [1a] and [1b]. First, we compute a correlation matrix (Table 3) to examine potential multicollinearity problems. The highest correlation is that between *GROWTH* and *LIQ* (0.7253), followed by those between *SOLV* and *LEV* (-0.5735), *COV* and *ROBA* (0.4971), *COV* and

Table 3. Correlation matrix.

	COST_D	VOL	LNFEES	LNASS	ROBA	LEV	LIQ	TAN	GROWTH	SOLV	COV	AGE
COST_D	1											
VOL	-0.0106	1										
LNFEES	0.0351	-0.1123	1									
LNASS	-0.1236	-0.1574	0.2052	1								
ROBA	0.0358	-0.0853	-0.0241	0.0335	1							
LEV	-0.0643	-0.0108	-0.0198	0.0915	-0.162	1						
LIQ	-0.1189	0.0645	0.0373	0.1337	0.0204	-0.3648	1					
TAN	-0.1384	0.0606	-0.0803	-0.0149	-0.1006	0.1576	-0.17	1				
GROWTH	-0.0288	0.0250	-0.0094	0.1165	0.2599	-0.0199	-0.0659	-0.026	1			
SOLV	-0.1088	0.0893	0.0255	0.0867	0.0020	-0.5735	0.7253	0.0312	-0.0707	1		
COV	-0.152	-0.0347	0.0059	0.0444	0.4971	-0.3897	0.2901	-0.0756	0.1169	0.3909	1	
AGE	-0.0501	0.0231	0.1043	0.0757	-0.1402	-0.1090	0.1388	0.0026	-0.0124	0.1748	-0.0044	1

COST_D: Cost of debt; VOL: 1 if voluntary audits, 0 if mandatory audits; LNFEES: Natural logarithm of audit fees; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company. Coefficients in bold denote statistical significance at 5% level.

Source: Authors' own estimations.

Table 4. Fixed-effects regression results.

	Model 1a		Model 1b	
	Coeff.	t	Coeff.	t
VOL	0.0099	2.95***	0.0098	2.92***
LNFEES	-0.0005	-0.47	-0.0006	-0.59
INTER	-0.0056	-3.21***	-0.0056	-3.17***
LARGE	-		-0.0002	-0.15
BIG	-		0.0015	0.93
LNASS	-0.0058	-7.99***	-0.0058	-8.02***
ROBA	0.0022	0.85	0.0023	0.89
LEV	-0.0824	-17.53***	-0.0823	-17.51***
LEV_SQ	0.0687	11.57***	0.0687	11.56***
LIQ	-0.0013	-3.96***	-0.0013	-3.96***
TAN	-0.0035	-1.59	-0.0035	-1.61
GROWTH	0.0015	2.17**	0.0015	2.18**
SOLV	-0.0013	-3.08***	-0.0013	-3.07***
COV	0.0000	-4.17***	0.0000	-4.18***
AGE	-0.0049	-20.25***	-0.0049	-20.26***
Intercept	0.2410	28.38***	0.2414	28.40***
N	19,950		19,950	
F	313.89		284.05	
R-Within	29.28%		29.29%	

COST_D: Cost of debt; VOL: 1 if voluntary audits, 0 if mandatory audits; LNFEES: Natural logarithm of audit fees; INTER: Interaction of VOL and LNFEES; LARGE: 1 if audited by Big 4 or Middle-Tier, 0 if audited by small auditor; BIG: 1 if audited by Big 4, 0 otherwise; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company.

***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Coefficients of year dummies are not included for parsimony.

Source: Authors' own estimations.

SOLV (0.3909), and COV and LEV (-0.3897). Since all the correlations are below 0.80, we do not expect collinearity problems (Clatworthy & Peel, 2007; Firth, 1997).

We then ran Models [1a] and [1b]. Table 4 reports the results obtained by FE regressions in these samples. We can see that the explanatory of both models is qualitatively similar (around 29.28%), as well as the coefficients of the variables. The two additional variables included in Model 1b are not significant, in line with prior studies on SMEs (Huguet & Gandía, 2014; Kim et al., 2011). Regarding the control variables, we can observe that most of the variables are significant and have the predicted sign. Only two variables (ROBA and TAN) are not significant. Larger companies (LNASS), older companies (AGE), and companies with higher financial soundness (LIQ, SOLV and COV) have a lower cost of debt. With regard to LEV and LEV_SQ, we can observe a non-linear relationship, as stated by Huguet and Gandía (2014), what involves that companies profit from a lower cost of debt as leverage increases (better conditions as a consequence of higher trading) until a level from which the risk taken by lenders moves this effect, and thus the cost of debt rises as leverage increases.

With regard to Hypothesis 1, we can see that VOL is significantly positive, what suggests that voluntarily audited companies pay higher fees than mandatorily audited companies. This may be due to the fact that voluntary audits are perceived as less credible than mandatory audits. However, as we will explain when examining Hypothesis 3, voluntary audits may signal their commitment with audit quality via audit fees. Regarding Hypothesis 2, the coefficient of LNFEES is not significant in any of the regressions, so results do not support the idea that mandatorily audited

companies that pay higher audit fees are charged with lower financing costs. Therefore, among mandatory audits, audit fees do not seem to have relevance for lenders, what can be due to the fact that differences in the audit fees among mandatory audits are not perceived as affecting audit quality.

With regard to Hypothesis 3, we can see that the coefficient of *INTER* is significantly negative, suggesting that audit fees help to reduce the cost of debt when companies are voluntarily audited. Considering the combined effect of *VOL* and *INTER*, we can see that the negative coefficient of *LNFEES* prevails over that of *VOL*, and thus voluntarily audited companies may be charged with a lower cost of debt if they are willing to pay enough for the audit. As an example, a voluntarily audit firm that pay €7,300² has a cost of debt that is 2.29 basis points lower than a mandatorily audit firm. Solving an algebraic operation, we can estimate that the minimum audit fees for which voluntary audits have a reduction on the cost of debt is approximately €5,700. These results also show an asymmetric effect audit fees on the cost of debt, depending on whether the audit is voluntary or mandatory.

4.2. Consideration of abnormal fees

As stated in Section 3.2, we have to note that the effect of *LNFEES* on the cost of debt is not significant, because what really matters for lenders is the deviations of the actual fees to the expected fees, i.e. the abnormal fees. Therefore, we run Model [2] to estimate the expected fees, according to the company characteristics. Then, we calculate *AB_LNFEES* as the difference between *LNFEES* and the fitted values of the regression, and use *AB_LNFEES* to run Models [3a] and [3b]. Table 5 shows the results of Model [2] for the estimation of *AB_LNFEES*, and regression results for Models [3a] and [3b] are shown in Table 6.

Results from Table 5 show that the R^2 of the model is 21.49%. Although it seems somewhat lower, we have to note that the explanatory power of the model is similar to studies focused on small audited companies (Gandía & Huguet, 2018; Peel & Roberts, 2003), what is due to the strong link of audit fees to corporate size (Hope & Langli, 2010), as well as the lower sensitivity of audit pricing to changes in corporate size, rather than misspecification problems (Peel & Roberts, 2003). On the other hand, we can see that most of the variables are significant, so we rely on the fitted values of this regression to estimate *AB_LNFEES*. Panel B and C show the descriptive statistics of *AB_LNFEES*. We can see that, on average, *AB_LNFEES* is negative, and voluntarily audited companies have lower abnormal audit fees than mandatory audits, what is in line with expectations that larger firms pay higher audit fees.

Results from Table 6 show that neither *VOL* nor *AB_LNFEES* are significant, while *INTER_AB* is significantly negative, being qualitatively similar to *INTER*. Therefore, these results can be similarly interpreted to those of Table 4: voluntarily audited companies may profit from a lower cost of debt if they signal their commitment with audit quality paying higher abnormal fees. Considering the coefficient of Model [3.a], voluntarily audited companies that pay abnormal fees higher than €1,000 will have a reduction in their cost of debt.

Table 5. Abnormal fees.**Panel A:** Estimation of abnormal accruals

	Coef.	T
LARGE	0.1366	15.30***
BIG	0.2809	24.25***
LNASS	0.1150	26.91***
LNSAL	0.0871	19.58***
LNEMP	0.0661	22.11***
INVREC	0.0910	7.58***
ACQ	-0.0428	-8.87***
INT_ASS	0.0558	1.93*
UNUS	0.0529	0.80
SIMP_GAAP	-0.0323	-6.83***
NUM_SUBS	0.0026	3.05***
GROUP	0.0222	4.37***
LEV	-0.0294	-2.56***
CH_LEV	0.0532	2.61***
GROWTH	0.0000	0.32
ROBA	0.0665	3.12***
N_EARN	0.0413	6.30***
NEG_ROBA	-0.0734	-3.42***
CURRENT	-0.0038	-3.33***
QUICK	0.0075	4.27***
SOLV	0.0534	2.78***
CH_SOLV	-0.0270	-0.46
MOD_REP	0.0384	7.75***
YEAR_END	-0.0336	-3.00***
C_CITY	0.0884	12.91***
AGE	0.0029	15.23***
Industry Dummies	0.1450	4.12***
Year Dummies	0.1723	3.91***
Intercept	-0.3902	-7.43***
N	29,573	
F	161.65	
R-Squared	21.49%	

Panel B: Distributional properties of AB_LNFEES (16,714 observations)

Variable	Mean	S. Dev.	1%	25%	50%	75%	99%
AB_LNFEES	-0.0015	0.3062	-0.6928	-0.2105	-0.0071	0.2091	0.7088

Panel C: Mean and standard deviation of AB_LNFEES by audit status

Variable	Voluntary Audit (1566 observations)		Mandatory Audit (15,148 observations)		Test for mean differences	
	Mean	Std. Dev.	Mean	Std. Dev.	Diff	t
AB_LNFEES	-0.0156	0.3078	0.0000	0.3060	-0.0156	-1.92**

LARGE: 1 if audited by Big 4 or Middle-Tier, 0 if audited by small auditor; BIG: 1 if audited by Big 4, 0 otherwise; LNASS: Natural logarithm of total assets; LNSAL: Natural logarithm of net sales; LNEMP: Natural logarithm of number of employees; INVREC: Ratio of inventory and receivables to total assets; ACQ: 1 if company made acquisitions, 0 otherwise; INT_ASS: Ratio of intangible assets to total assets; UNUS: 1 if unusual items in the income statement, 0 otherwise; SIMP_GAAP: 1 if use of simplified GAAP, 0 otherwise; NUM_SUBS: Number of subsidiaries; GROUP: 1 if company belongs a group, 0 otherwise; LEV: Leverage; CH_LEV: Changes in leverage; GROWTH: Growth in sales; ROBA: Return on business assets; N_EARN: 1 if negative earnings, 0 otherwise; NEG_ROBA: Interaction of N_EARN and ROBA; CURRENT: Current ratio; QUICK: Quick ratio; SOLV: Solvency ratio; CH_SOLV: Changes in solvency; MOD_REP: 1 if modified report, 0 otherwise; YEAR_END: 1 if year-end 31 December, 0 otherwise; C_CITY: 1 if company located in Madrid or Barcelona, 0 otherwise; AGE: Age of the company.

***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Source: Authors' own estimations.

Table 6. Regression results with abnormal fees (AB_LNFEES).

	Model 3a		Model 3b	
	Coeff.	t	Coeff.	t
VOL	-0.0011	-1.39	-0.0010	-1.36
AB_LNFEES	-0.0005	-0.38	-0.0005	-0.43
INTER_AB	-0.0075	-3.37***	-0.0074	-3.35***
LARGE	-		-0.0028	-1.63
BIG	-		0.0040	2.02**
LNASS	-0.0060	-7.40***	-0.0061	-7.43***
ROBA	0.0036	1.26	0.0036	1.28
LEV	-0.0859	-16.50***	-0.0860	-16.51***
LEV_SQ	0.0702	10.57***	0.0703	10.58***
LIQ	-0.0012	-3.33***	-0.0012	-3.33***
TAN	-0.0049	-2.00**	-0.0050	-2.05**
GROWTH	0.0018	2.42**	0.0018	2.41**
SOLV	-0.0012	-2.47**	-0.0012	-2.50**
COV	0.0000	-3.77***	0.0000	-3.79***
AGE	-0.0049	-20.27***	-0.0049	-20.30***
Intercept	0.2407	27.26***	0.2411	27.29***
N	16,714		16,714	
F	324.24		292.07	
R-Within	33.26%		33.28%	

COST_D: Cost of debt; VOL: 1 if voluntary audits, 0 if mandatory audits; AB_LNFEES: Abnormal LNFEES; INTER_AB: Interaction of VOL and AB_LNFEES; LARGE: 1 if audited by Big 4 or Middle-Tier, 0 if audited by small auditor; BIG: 1 if audited by Big 4, 0 otherwise; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company.

***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Coefficients of year dummies are not included for parsimony.

Source: Authors' own estimations.

4.3. Control for the cost of debt lagged one period

On the other hand, as explained in Section 3.2, *COST_D* may suffer from staleness, in the sense that a portion of the observed interest rate is due to contract from previous years. Some studies have mitigated this problem by including the variable lagged one period as an additional control variable (Huguet & Gandía, 2014; Cano Rodríguez et al., 2016). Therefore, we carry out an additional analysis including *COST_D_LAG* to Models [1a], [1b], [3a] and [3b]. Results are reported in Table 7.

We can see that the explanatory power of the models increases after the inclusion of *COST_D_LAG*, (from 29.28% to 34.26% in Model [1a], and from 33.26% to 37.26% in Model [3b]). Nevertheless, we have to note that some authors state that the use of lagged variables in fixed-effects estimations is problematic (Nickell, 1981; Angrist and Pischke, 2009), so different results from these regressions should be interpreted with caution. However, we can observe that the sign of the coefficients and their significance are qualitatively similar to those reported in Sections 4.1 and 4.2, so results from this additional analysis support those obtained in the main analysis.

4.4. Voluntary vs mandatory audit

As we have explained in Section 3.1, the sample is composed of companies below SAT (a priori voluntarily audited) and above SAT (mandatorily audited). We have observed in Sections 4.1 to 4.3 that the interaction term is significantly negative, what suggests the effect of audit fees is asymmetrical depending on the audit is voluntary

Table 7. Regression results with COST_D_LAG.

Panel A: LNFEES				
	Model 1a		Model 1b	
	Coeff.	t	Coeff.	t
COST_D_LAG	0.2712	33.00***	0.2711	32.99***
VOL	0.0094	2.91***	0.0093	2.89***
LNFEES	-0.0001	-0.08	-0.0002	-0.19
INTER	-0.0051	-3.03***	-0.0051	-3.00***
LARGE	-		-0.0005	-0.37
BIG	-		0.0016	0.99
LNASS	-0.0040	-5.70***	-0.0040	-5.72***
ROBA	-0.0140	-5.53***	-0.0139	-5.49***
LEV	-0.0555	-12.05***	-0.0555	-12.04***
LEV_SQ	0.0432	7.47***	0.0432	7.47***
LIQ	-0.0011	-3.47***	-0.0011	-3.47***
TAN	-0.0023	-1.10	-0.0024	-1.12
GROWTH	0.0007	1.03	0.0007	1.03
SOLV	-0.0012	-2.92***	-0.0012	-2.91***
COV	0.0000	3.57***	0.0000	3.56***
AGE	-0.0029	-11.91***	-0.0029	-11.92***
Year Dummies	Yes		Yes	
Intercept	0.1531	17.78***	0.1535	17.81***
N	19,950		19,950	
F	375.17		341.10	
R-Within	34.26%		34.26%	
Panel B: AB_LNFEES				
	Model 3a		Model 3b	
	Coeff.	t	Coeff.	t
COST_D_LAG	0.2486	27.34***	0.2487	27.35***
VOL	-0.0005	-0.63	-0.0004	-0.60
AB_LNFEES	0.0004	0.31	0.0003	0.26
INTER_AB	-0.0063	-2.94***	-0.0063	-2.93***
LARGE	-		-0.0032	-1.93*
BIG	-		0.0041	2.11**
LNASS	-0.0042	-5.31***	-0.0042	-5.32***
ROBA	-0.0112	-3.98***	-0.0111	-3.97***
LEV	-0.0608	-11.85***	-0.0609	-11.86***
LEV_SQ	0.0466	7.16***	0.0466	7.18***
LIQ	-0.0009	-2.68***	-0.0009	-2.67***
TAN	-0.0030	-1.24	-0.0031	-1.29
GROWTH	0.0011	1.52	0.0011	1.50
SOLV	-0.0013	-2.72***	-0.0013	-2.75***
COV	0.0000	2.61***	0.0000	2.59***
AGE	-0.0030	-12.42***	-0.0030	-12.45***
Year Dummies	Yes		Yes	
Intercept	0.1597	17.63***	0.1601	17.66***
N	16,714		16,714	
F	366.11		331.54	
R-Within	37.26%		37.29%	

COST_D: Cost of debt; VOL: 1 if voluntary audits, 0 if mandatory audits; LNFEES: Natural logarithm of audit fees; INTER: Interaction of VOL and LNFEES; AB_LNFEES: Abnormal LNFEES; INTER_AB: Interaction of AB_LNFEES and VOL; LARGE: 1 if audited by Big 4 or Middle-Tier, 0 if audited by small auditor; BIG: 1 if audited by Big 4, 0 otherwise; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company. ***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Coefficients of year dummies are not included for parsimony.

Source: Authors' own estimations.

or mandatory. In order to disentangle this effect, but avoiding the use of the interaction term. we run separately Models [1a] and [3a] for the subsamples of companies below ($VOL = 1$) and above SAT ($VOL = 0$), excluding VOL and $INTER$. Results are reported in Table 8.

Table 8. Voluntary vs mandatory audits.

Panel A: Model 1a				
	Below SAT		Above SAT	
	Coef.	t	Coef.	t
LNFEES	-0.0069	-1.87*	0.0004	0.36
LNASS	-0.0006	-0.19	-0.0062	-8.14***
ROBA	-0.0177	-1.90*	0.0032	1.17
LEV	-0.0891	-5.01***	-0.0840	-16.85***
LEV_SQ	0.0571	2.62***	0.0727	11.47***
LIQ	0.0004	0.55	-0.0012	-3.44***
TAN	0.0139	1.68*	-0.0039	-1.69*
GROWTH	-0.0023	-0.95	0.0014	1.87*
SOLV	-0.0023	-1.82*	-0.0015	-3.02***
COV	-0.0001	-1.13	0.0000	-3.91***
AGE	-0.0040	-4.58***	-0.0049	-19.24***
_cons	0.1847	5.10***	0.2427	27.34***
N	1,748		18,202	
F	14.10		327.47	
R-Within	21.84%		29.87%	

Panel B: Model 3a				
	Below SAT		Above SAT	
	Coef.	t	Coef.	t
cost_d_d				
AB_LNFEES	-0.0087	-2.28**	0.0000	-0.01
LNASS	-0.0032	-0.91	-0.0062	-7.22***
ROBA	-0.0038	-0.40	0.0034	1.13
LEV	-0.1006	-5.25***	-0.0864	-15.62***
LEV_SQ	0.0721	2.99***	0.0729	10.28***
LIQ	0.0005	0.58	-0.0011	-2.70***
TAN	0.0186	2.11**	-0.0059	-2.27**
GROWTH	-0.0028	-1.12	0.0017	2.06**
SOLV	-0.0022	-1.61	-0.0014	-2.56**
COV	-0.0001	-1.82*	0.0000	-2.98***
AGE	-0.0035	-4.13***	-0.0049	-19.54***
_cons	0.1811	4.89***	0.2437	26.37***
N	1,566		15,148	
F	13.60		341.40	
R-Within	22.26%		34.03%	

COST_D: Cost of debt; LNFEES: Natural logarithm of audit fees; AB_LNFEES: Abnormal LNFEES; LNASS: Natural logarithm of total assets; ROBA: Return on Business Assets; LEV: Leverage; LIQ: Liquidity ratio; TAN: Tangibility ratio; GROWTH: Growth of sales; SOLV: Solvency ratio; COV: Coverage ratio; AGE: Age of the company.

***, ** and * denote coefficients' statistical significance at the 1%, 5% and 10% confidence level, respectively.

Coefficients of year dummies are not included for parsimony.

Source: Authors' own estimations.

As we can see, the coefficient of *LNFEES* is significantly negative for the sub-sample below SAT, whereas is not significant for the sample above SAT. Results are similar in Panel B, when using *AB_LNFEES*. These results support those reported in Sections 4.1 to 4.3, and they confirm that the effect of audit fees on the cost of debt is asymmetrical depending on the character of the audit: Voluntary audits are charged with a lower cost of debt when audit fees are higher, while there are no differences on the cost of debt for mandatory audits based on the fees paid to auditors. These results support the hypothesis that voluntary audits can signal their commitment with accounting through the price of the audit.

5. Conclusions

Few studies have examined the association between audit fees and the cost of debt, and the evidence is mixed. Furthermore, the empirical evidence about the effects of

voluntary audits on the cost of debt is also mixed. This study examines whether the association between cost of debt and voluntary audits can be affected by the fees paid to auditors. Particularly, and based on the credence goods theory, we examine whether, in the voluntary audit setting, there are differences in the perception of audit quality by users, or in the signalling effect of auditing, depending on the audit fees.

Using a sample of Spanish audited SMEs, we examine whether voluntary audits have a lower cost of debt as compared to mandatory audits, as well as whether there is an association between audit fees and the cost of debt, and if this effect is different between voluntary and mandatory audits. Results show an asymmetric effect of audit fees on the cost of debt: higher audit fees are associated with a lower cost of debt for voluntarily audited companies, while the association is not significant for mandatory audits. Results remain unchanged after the inclusion of auditor-type variables and the inclusion of the cost of debt lagged one period as a control variable. Separate regressions for voluntary and mandatory audits also show the asymmetrical effect of audit fees depending on the type of audit. These results are linked to prior literature that shows an audit fee premium for voluntary audits as compared to mandatory audits: audits, as credence goods, can use price to signal quality, so auditees that seek to signal a commitment with accounting quality may be willing to pay a premium in the voluntary setting, and lenders may value the signalling effect of price, explaining the negative association between audit fees and the cost of debt when companies are voluntarily audited.

The paper has several limitations. First, estimations can be affected by endogeneity problems. We have tried to mitigate them using FE regressions, but we cannot rule out completely that the association between the cost of debt and audit-based variables is not unidirectional. A second limitation is related with the definition of voluntary audits. We have considered that companies below SAT are exempt from the audit requirement, but they can be mandatorily audited by other reasons. Since we do not have any information about the reason they are being audited, we cannot ensure that these companies are audited on a voluntary basis.

Results are also of relevance for managers, who are in charge of the preparation of the financial statements of the companies and have to look out for the credibility and reputation of the company, including the financial information.

The paper presents several opportunities for future research. First, since we found that there is an association between the cost of debt and audit fees when companies are voluntarily audited, it would be appropriate to examine whether audit fees have also an effect on the association between the auditor type (Big 4, Middle-Tier auditors and small auditors) and the cost of debt of audited companies. Furthermore, we should examine whether audit quality is affected by audit fees, and the combined effect of voluntary audits and audit fees on audit quality. On the other hand, results about the interaction between voluntary audits and audit fees should encourage to examine the interaction of other audit characteristics that may affect both audit quality and the credibility of auditors and financial information. Finally, given that managers are in charge of the preparation of the financial statements of the companies, and have to look out for the reputation of the company, future research should examine the managerial implications derived from the audit fees paid by the auditee.

Notes

1. Since 1/1/2008 until 1/1/2016, Spanish SAT and Spanish thresholds to consider a company as a SME (which can prepare simplified financial statements) were the same, but the latter were increased up to the EU limits as established in the Directive 2013/34/EU.
2. As shown in Table 2, the mean for *LNFEES* is 1.9878, which corresponds with audit fees that amount €7,300.

Disclosure statement

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