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Financial reporting quality and the cost of debt of SMEs

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Abstract This study explores a large and detailed dataset of financial statements of Belgian small and medium-sized enterprises (SMEs) over the 1997–2010 period. Using accruals quality as a proxy for the quality of SMEs' financial reports, we find that the quality of SMEs' financial statements is negatively related to those companies' effective interest cost. This result is also highly economically significant. The findings in this paper are consistent with the idea that earnings are important for creditors in predicting SMEs' reimbursement capacity (i.e., future cash flows) and that less estimation error in accruals enhances earnings' ability to predict future cash flows. We deliver evidence of an important economic benefit of financial reporting for SMEs, to wit, the potential to reduce information asymmetry between SMEs and their creditors through higher-quality financial reporting.

Keywords SME · Cost of debt · Financial reporting quality · Information asymmetry

JEL Classifications G21 · G32 · M41

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1 Introduction

In order to inform their stakeholders, European small and medium-sized enterprises (SMEs) have to publish a set of annual financial statements (i.e., a balance sheet, a profit and loss account, and notes to the financial statements) (Directive 2013/34/EU). Whether those financial statements are actually able to reduce information asymmetries between SMEs and their stakeholders, and thus have the potential to deliver economic benefits to firms, are questions which have not received much attention yet. To the best of our knowledge, Van Caneghem and Van Campenhout (2012), Howorth and Moro (2012) and Karjalainen (2011) are the only studies in this direction.

Firstly, Van Caneghem and Van Campenhout (2012) report evidence that leverage is positively related to proxies for the financial reporting quality (FRQ) of SMEs. This suggests that FRQ impacts SMEs' access to credit. However, this study does not examine whether FRQ impacts the conditions at which debt is obtained and mainly uses dichotomous measures of FRQ.

The second study, Howorth and Moro (2012), examines whether trust between an SME and its banker reduces the SME's cost of debt. In their model, they include a variable for perceived information quality, quantity, completeness and timeliness. However, this variable controls for SMEs' general information environment and is not limited to information from SMEs' financial statements. Howorth and Moro

(2012) find a positive association between their information factor and the interest rate, implying that more and better information is associated with higher interest rates. According to the authors, this finding is due to the fact that information demand is higher for SMEs with higher risk.

Thirdly, Karjalainen (2011) finds a negative association between audit outcomes and the cost of debt, but for a broad set of privately held businesses, not SMEs in particular. In sum, there is a lack of research on the benefits of high-quality financial reporting by SMEs.

The purpose of this study is to contribute to the literature by explicitly testing whether and to what extent SMEs' FRQ affects the cost of debt. The study focuses on the cost of debt because bank loans are a key source of finance for SMEs (Howorth and Moro 2012; Grunert and Norden 2012; Berger and Udell 1998) and informational opacity often hinders SMEs to obtain such loans (Van Caneghem and Van Campenhout 2012; Ortiz-Molina and Penas 2008; Hernández-Cánovas and Martínez-Solano 2007).

To examine the impact of SMEs' FRQ on the cost of debt, we use a large panel dataset with detailed information on SMEs' financial statements and regress the cost of debt in year $t + 1$ on FRQ in year t, our test variable, while controlling for size, cash flow, age, leverage, interest coverage, asset tangibility, negative equity, growth, maturity, secured status (all measured in year t) and industry effects. Our measure of FRQ is accruals quality (AQ), an earnings quality metric borrowed from the accounting literature (Bharath et al. 2008; Francis et al. 2004, 2005; Dechow and Dichev 2002; McNichols 2002). AQ indicates the extent to which accruals, i.e., the part of earnings that is not cash but stems from accrual accounting, or, in other words, the difference between earnings and cash flows, are free from noise (induced by, for example, inaccurate accounting assumptions and estimates). Since accruals are the part of earnings that potentially introduces noise in the earnings number, AQ also indicates the extent to which earnings are free from noise and are better able to predict future cash flows. The latter is key for assessing default risk and thus for creditors in the debt contracting process.

This study adds to the SME literature in various ways. Firstly, while to the best of our knowledge, no prior study has linked the cost of debt financing of SMEs with earnings' ability to predict future cash flows and thus reimbursement capacity, this study documents that SMEs' effective interest cost decreases in AQ. This relation holds when the analysis is restricted to new debt. These results are consistent with the idea that earnings are important for creditors in predicting SMEs' reimbursement capacity (i.e., future cash flows) and that less estimation error in accruals enhances earnings' ability to predict future cash flows.

Secondly, the economic significance of this relation turns out to be quite impressive. In fact, the effective interest cost of an SME at the 10th AQ percentile is on average 194.9 basis points higher than the effective interest cost of an SME at the 90th percentile.

Thirdly, AQ, our measure of FRQ provides a continuous measure of FRQ and allows to directly test the impact of FRQ on the cost of debt. A prior study (Van Caneghem and Van Campenhout 2012) used various proxies for FRQ based on auditor verification to test the impact of FRQ on SMEs' leverage. Most of those proxies only allow for a classification of companies in a limited number of FRQ level groups and do not allow for a continuous ranking on this dimension. Also, tests using auditor verification-based proxies rely on the assumption that auditor verification improves the quality of financial statement information and are as such a joint test of (1) auditor verification improving FRQ and (2) FRQ impacting the availability and use of debt.

Fourthly, the study adds to the literature on SMEs' FRQ by using panel data, an avenue of research suggested by Van Caneghem and Van Campenhout (2012).

The findings of this paper suggest that higher-quality information reduces information asymmetry and that banks reward high-quality financial statement information by setting a lower interest rate. These results are relevant to both regulators and SMEs. To regulators, the results show that the information in SMEs' financial statements is used by and thus relevant for market participants. To SMEs, our results indicate that high-quality financial reporting has economic benefits, i.e., it reduces the cost of debt financing. To the extent that earnings management impairs FRQ, SME managers may want to refrain from managing their earnings in order to reduce the cost of debt financing.

The remainder of this paper is structured as follows. Section 2 develops our hypothesis. Section 3 discusses

our research design. Section 4 describes the sampling procedure. Section 5 provides some descriptive statistics, discusses the selected econometric method and elaborates on the main results. Section 6 concludes.

2 Hypothesis development

The assessment of default risk (i.e., the risk of non-payment) is crucial in the credit granting process. As future operating cash flows determine the firm's capacity to reimburse, they are a prominent parameter for pricing decisions (see, for example, Minnis 2011). Prior research (Dechow et al. 1998; Dechow 1994) indicates that current earnings, as compared to current (i.e., realized) operating cash flows, better measure firm performance, more closely reflect expected cash flows and better predict future operating cash flows. Accordingly, for creditors, the reported earnings number—and the quality thereof—is a key information item.

The reason for the superiority of earnings over cash flows in predicting cash flows is that accruals shift the recognition of cash flows over time in order to mitigate the timing and mismatching problems inherent in cash flows (Dechow and Dichev 2002; Dechow 1994). However, Dechow and Dichev (2002, pp. 35–36) argue that the accrual process involves making a lot of assumptions and estimates. A first example is managerial assumptions regarding the valuation of tangible fixed assets. Alternative conjectures with respect to economic lives and residual values impact depreciation expense and earnings numbers. Another example is the subjectivity involved in the determination of provisions for bad debt. At year-end, managers have to estimate what amount of credit sales will probably not be paid and record a provision for this in the books. The higher (lower) this provision, the lower (higher) the company's earnings. Due to the inherent uncertainty, estimation errors are unavoidable. In addition, company managers can have incentives, such as safeguarding earning-based bonuses or avoiding debt covenant violation, to intentionally influence the accruals estimation process and opportunistically manage earnings. Many prior studies [see Healy and Wahlen (1999) for a review] have reported evidence of such behavior. The bottom line is that intentional as well as unintentional errors create noise in accruals which reduces their beneficial role (Dechow and Dichev 2002). For the purpose of this study, accruals and earnings are considered of higher quality when they are less affected by estimation errors and are thus better able to predict future cash flows. That is, higher-quality accruals and earnings enable creditors to make a better, more accurate, assessment of default risk and hence reduce information asymmetry.

Following theoretical models (Leuz and Verrecchia 2005; Easley and O'Hara 2004), some prior listed firm studies (Bharath et al. 2008; Francis et al. 2005) have argued that creditors price the quality of the reported earnings number and charge a premium for poor-quality earnings information. The underlying rationale is that information risk (i.e., "the likelihood that firm-specific information that is pertinent to investor pricing decisions is of low quality" (Francis et al. 2005, p. 296)) is non-diversifiable. Consistent with those arguments, prior studies have reported evidence on the pricing of earnings quality by creditors in the context of listed American companies (Bharath et al. 2008; Francis et al. 2005).

While the same arguments can be expected to apply in an SME context, academics have started to acknowledge over the last decades that "small businesses are not just larger firms scaled down" (Scherr and Hulburt 2001, p. 85), but that they differ fundamentally from larger firms (Van Caneghem and Van Campenhout 2012; Heyman et al. 2008; Scherr and Hulburt 2001). For instance, small businesses are inherently more risky (Van Caneghem and Van Campenhout 2012; Ortiz-Molina and Penas 2008) and have more limited external financing alternatives (basically bank credit and supplier credit) as they do not have access to public capital markets (Van Caneghem and Van Campenhout 2012; Hernández-Cánovas and Martínez-Solano 2007; Scherr and Hulburt 2001). Moreover, the private debt markets that finance small businesses suffer to a larger extent from informational opacity (Van Caneghem and Van Campenhout 2012; Ortiz-Molina and Penas 2008; Hernández-Cánovas and Martínez-Solano 2007; Scherr and Hulburt 2001), and earnings quality is lower for smaller firms (Ball and Shivakumar 2005). Such differences are likely to impact both the financing options and the financing methods of small businesses (Van Caneghem and Van Campenhout 2012; Heyman et al. 2008; Ortiz-Molina and Penas 2008). Therefore, prior results need not to hold in an

Table 1 Variable definitions

Variable	Definition
Dependent variable	
Cost of debt	Interest expense $t + 1$/average debt $t + 1$
Test variable	
AQ	See Sect. 3; Research design
Control variables	
Size	ln (net sales)
CF performance	CFO/total assets
Age	ln [1 + (year observation − year incorporation)]
Leverage	Debt/total assets
Interest coverage	Operating income/interest expense
Asset tangibility	Net property, plant and equipment/total assets
Negative equity	Dummy variable taking 1 if book value of equity is negative—0 otherwise
Growth	Year-over-year percentage growth in sales
Maturity	Debt with initial maturity of more than 1 year/debt
Secured status	Dummy variable taking 1 if some debt is secured—0 otherwise
Industry dummies	Dummy variables taking 1 for the Nace-BEL 2003 sections of Interest—0 otherwise

SME context, an important segment of the European economy. Whether bankers price the quality of SMEs' earnings remains thus an empirical question. This leads to the following hypothesis (in alternative format):

H Ceteris paribus, there is a negative association between SMEs' earnings quality and the cost of SMEs' debt financing.

3 Research design

To test whether the quality of SMEs' earnings is related to the cost of debt financing, we estimate regression (1) below, where i and t index firms and years, respectively. The definitions of the variables in this regression can be found in Table 1.

$$\begin{aligned}\text{Cost of debt}_{i,t+1} &= \beta_0 + \beta_1 * \text{AQ}_{i,t} + \beta_2 * \text{Size}_{i,t} \\ &+ \beta_3 * \text{CF performance}_{i,t} + \beta_4 * \text{Age}_{i,t} + \beta_5 * \\ &\text{Leverage}_{i,t} + \beta_6 * \text{Interest coverage}_{i,t} \\ &+ \beta_7 * \text{Asset tangibility}_{i,t} + \beta_8 * \text{Negative equity}_{i,t} \\ &+ \beta_9 * \text{Growth}_{i,t} + \beta_{10} * \text{Maturity}_{i,t} \\ &+ \beta_{11} * \text{Secured status}_{i,t} + \beta_{12} * \boldsymbol{X}_{i,t} + \varepsilon_{i,t} \qquad (1)\end{aligned}$$

In line with prior studies (Minnis 2011; Francis et al. 2005), the cost of dept is computed using data from the financial statements as the 1-year-ahead interest expense[1] divided by the average amount of financial debt over year $t + 1$, i.e., the 1-year-ahead effective interest cost. The 1-year-ahead effective interest cost is used to mitigate the concerns stemming from the staleness of the cost of debt variable (Minnis 2011). Interestingly, the Belgian accounts allow us to measure the cost of debt at a more detailed level than some prior SME studies (e.g., Hernández-Cánovas and Martínez-Solano 2010). The effective interest cost is probably the best measure of the cost of debt when firm-level instead of loan-level data are used. An advantage of this firm-level measure is that it enables to conduct a large-sample study, which enhances the external validity of the results. However, like in prior studies (e.g., Minnis 2011; Hernández-Cánovas and Martínez-Solano 2007; Francis et al. 2005; Pittman and Fortin 2004), a limitation of this measure is that it does not allow for linking negotiated loan terms with firm characteristics at the same moment in time. Also, this measure is prone to outliers. To mitigate the impact of outliers, the cost of debt variable is winsorized at the 5th and 95th percentiles.

[1] Since debt includes liabilities related to the discounting of accounts receivable, the related costs are added to the interest expense. Not incorporating these costs yields similar results.

Following prior empirical work (e.g., Francis et al. 2005), AQ is measured in two steps. First, the following model, initially proposed by Dechow and Dichev (2002) and extended by McNichols (2002), is estimated cross-sectionally in each industry-year combination[2] using OLS.[3]

$$\Delta WC_{i,t} = \gamma_0 + \gamma_1 * CFO_{i,t-1} + \gamma_2 * CFO_{i,t} + \gamma_3 * CFO_{i,t+1} + \gamma_4 * \Delta sales_{i,t} + \gamma_5 * PPE_{i,t} + \varepsilon_{i,t} \quad (2)$$

The subscripts i and t indicate firms and years, respectively. ΔWC_t[4] is the change in non-cash working capital from year $t-1$ to year t; CFO_t,[5] CFO_{t-1} and CFO_{t+1} are the cash flows from operations in year t, $t-1$, and $t+1$, respectively; $\Delta sales_t$ is the change in net sales in year t compared to year $t-1$; and PPE is the gross value of property, plant and equipment. To avoid heteroscedasticity problems (García-Teruel et al. 2010), all variables are scaled by average total assets of year t (Bharath et al. 2008; Francis et al. 2004). Consistent with prior studies (Francis et al. 2005), all variables are winsorized at the 1st and 99th percentiles. The residual of this regression reflects the accruals that are not related to cash flows realized in the current, prior or future year, nor to the change in net sales and the gross value of property, plant and equipment. The larger the absolute value of the residual, the greater the accrual estimation errors.

In a second step, a company- and year-specific AQ measure is computed as the standard deviation of the residuals in year t and the four preceding years.[6] A greater standard deviation is considered to reflect lower AQ (Dechow and Dichev 2002). To ease the interpretation of this variable, we multiply the AQ measure from the model with -1. Doing so, higher AQ numbers signal higher AQ.

As concerns the control variables, the model first includes firm-level control variables that are based on prior studies that have examined private firms' cost of debt (Minnis 2011; Hernández-Cánovas and Martínez-Solano 2010).[7] These control variables are firm size, cash flow (CF) performance, firm age, leverage, interest coverage, asset tangibility, negative equity and firm growth. The following associations between these control variables and the cost of debt are expected. First, larger and more cash-generating firms are viewed as bearing less financial risk, and so an inverse relationship with the cost of debt is expected. However, for CF performance, Hernández-Cánovas and Martínez-Solano (2010) report a positive association with the cost of debt, which might point at the relationship going in the other direction: SMEs with expensive debt need high cash flow levels to serve this debt. Size is measured as the natural logarithm of net sales[8] and CF performance as the cash flow from operations over total assets.

[2] Industries are based on the Nace-BEL 2003 sections. See also footnote 10.

[3] Since the dependent variable in the model is working capital accruals, a potential limitation of the model is that non-current accruals, where the cash flow realization typically takes longer than 1 year, are not considered when estimating AQ (Francis et al. 2005). However, this assumption of the AQ model seems very acceptable in this dataset. In almost 98 % of the cases, the length of the operating cycle (days' accounts receivable + days' inventory) is smaller than 1 year. Furthermore, the work of Dechow and Dichev (2002) has revealed that working capital accruals and total accruals are highly correlated (0.989, $p < 0.01$ in this sample), so that focusing on working capital accruals should not be an issue.

[4] In line with prior studies (Francis et al. 2004, 2005; Dechow and Dichev 2002), $\Delta WC = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD)$, where ΔCA is the change in current assets, $\Delta Cash$ is the change in cash and cash equivalents, ΔCL is the change in current liabilities, and ΔSTD is the change in short-term financial debt and the current portion of long-term debt. The detail in our data was used to explicitly adjust $(\Delta CA - \Delta Cash)$ for write-offs on inventories, accounts receivables and other current assets (Ooghe et al. 2012). Results of our analyses are robust to performing this adjustment.

[5] CFO was measured in line with prior studies (Francis et al. 2004, 2005). Taking into account differences in financial statement presentation across countries, in this study CFO was measured as bottom-line net income minus total accruals. Given the detail in the data, total accruals are not limited to depreciation and working capital accruals, but also include accruals related to, among others, write-offs, impairments and provisions (Ooghe et al. 2012). The results are robust to not including these accruals.

[6] Standard deviations of residuals are preferred instead of absolute values since sizeable residuals do not form a serious threat as long as they are consistently large (Francis et al. 2005). Moreover, there might be sound reasons for systematically big residuals (e.g., industry-related factors). In those cases, information risk remains limited. However, as illustrated in the robustness tests in Sect. 5.3, the results are robust to working with the absolute residuals from regression (2).

[7] Please note there are some clear similarities with Francis et al. (2005) as well.

[8] If the natural logarithm of total assets is applied as size measure, the results are qualitatively unchanged.

Second, consistent with relationship theory, more mature firms are expected to have longer-standing relationships with their banks and are more likely to have established respectable reputations (Van Caneghem and Van Campenhout 2012; Karjalainen 2011; Niskanen and Niskanen 2010). Therefore, in line with the results of studies by, e.g., Hernández-Cánovas and Martínez-Solano (2007) and Peltoniemi (2007), a negative coefficient on age is expected. Yet, several prior studies did not find support for the relationship lending argument (Howorth and Moro 2012). Perhaps the most important critique to the premise of relationship theory is that close firm–bank relationships entail the exchange of proprietary information, thereby potentially locking in the firm. Banks can exploit the power stemming from their monopolistic position by charging higher interest rates (Rajan 1992; Sharpe 1990). Age is defined as the natural logarithm of the age in years +1.

Third, since financial risk increases in leverage, it is expected that more highly levered companies pay a higher average interest rate, i.e., a positive coefficient is expected. But, also negative leverage coefficients are encountered in the academic literature (e.g., Minnis 2011; Francis et al. 2005; Beatty et al. 2002; Booth 1992), which is in line with the rationale that firms that are offered loans at attractive interest rates indeed borrow larger amounts. Leverage is measured as debt to total assets.

Fourth, as higher values for interest coverage and asset tangibility indicate less financial risk, a negative coefficient on these variables is expected. Interest coverage[9] is computed as operating income divided by the interest expense, asset tangibility as the net value of property, plant and equipment divided by total assets.

Fifth, a negative equity position points to negative past performance and more risk. Therefore, a positive coefficient on this variable is expected. Negative equity is measured using a dummy variable which equals 1 if the book value of equity is negative, 0 otherwise.

Finally, following prior research (Minnis 2011), the model also controls for growth. As faster growth induces more agency problems and risk (García-Teruel et al. 2010; Heyman et al. 2008), the direction of its effect on the cost of debt is expected to be positive. Growth is measured as the year-over-year percentage growth in sales.

Further, following prior studies (e.g., Peltoniemi and Vieru 2013; Bharath et al. 2008; Peltoniemi 2007; Dennis et al. 2000), the model includes a measure of debt maturity and an indicator variable secured status. The latter proxies for collateral pledge. Debt maturity and secured status are included for two reasons. A first reason is to control for potential interdependencies between the interest rate on the one hand and maturity and collateral on the other hand (Grunert and Norden 2012; Peltoniemi and Vieru 2013; Dennis et al. 2000). A second reason is to control for the prior finding that in the case of private debt (as opposed to public debt), FRQ not only impacts debt pricing but also debt maturity and collateral (Bharath et al. 2008). Since there are conflicting theories on the relationship between collateral and risk (Niskanen and Niskanen 2010; Dennis et al. 2000), no expectation on the sign of the coefficient on secured status is formulated. Similarly, no prediction is formulated for the coefficient on maturity (Dennis et al. 2000). Since this study is a firm-level (instead of a loan-level) study, maturity is defined as all debt with an initial maturity of more than 1 year to total debt. Secured status is a dummy variable that takes a value of 1 if at least some of the debt is secured by either the company itself or the government and 0 otherwise. Although the best possible proxy for the extent to which debt is secured in the context of this study, it is a rather weak measure when compared to prior loan-level studies (see, e.g., Peltoniemi and Vieru 2013; Peltoniemi 2007).

Finally, $\boldsymbol{X}$, a vector of industry dummies[10] is included to control for industry effects. The largest industry, retailing, serves as the base category.

[9] Whether interest subsidies are taken into account here or not does not influence the results.

[10] The industry dummies were based on the sections of the Nace-BEL 2003 industry classification, i.e., the Belgian 2003 application of the European Nace industry classification. Sections A, B and C, i.e., agriculture, fishing and natural resources, were combined as they include very small numbers of observations (see further Table 3 Panel c). In particular, the following industry dummies were built: primary sector (Nace-BEL A, B and C), manufacturing (Nace-BEL D), construction (Nace-BEL F), hotels and restaurants (Nace-BEL section H), transport (Nace-BEL I) and services (Nace-BEL K).

To mitigate the impact of outliers, all continuous independent variables except for age[11] are winsorized at the 1st and 99th percentiles.[12]

4 Data

To test our hypothesis, data from Belgian SMEs are used. In Belgium, all limited liability companies (irrespective of their size) are obliged by Belgian company law to file detailed annual accounts with the National Bank of Belgium (NBB) in a predefined format,[13] while in many countries, this is not the case (Heyman et al. 2008; Huyghebaert et al. 2007). The data for the present research were gathered from the Bel-first database of Bureau Van Dijk (BvD), which covers the annual accounts of all Belgian companies which have to deposit their accounts with the NBB. From the Bel-first database, for the unlisted companies, the non-consolidated financial statements filed with the NBB in a complete format[14] during the years 1997–2010 were collected for all industries except for the government, financial and utility sector (Vermoesen et al. 2013; Minnis 2011; Heyman et al. 2008). Further, only domestic companies were considered, and some legal forms (such as non-profit organizations) were excluded as well.[15] Observations without balance sheet data (Dechow and Dichev 2002) or with inconsistencies within the financial statements[16] were deleted.

Since the focus of this study is on SMEs, only firm-year observations from SMEs are withheld. As we use data from a European Union Member State, we define SMEs according to the European Commission's SME definition and apply this definition consistently with prior studies on European data (Vermoesen et al. 2013; Deloof et al. 2007). Accordingly, a company qualifies as an SME when the following criteria are met: (1) headcount in full-time equivalents (FTEs) smaller than 250, (2) annual sales not higher than 50 million euro *or* balance sheet total not exceeding 43 million euro and (3) no equity stake of at least 25 % (i.e., an independent company). The application of this definition reduces the sample significantly. The result is an initial database consisting of 102,374 firm-year observations of Belgian SMEs over the period 1997–2010.

Further, firm-year observations are left out whenever total assets increase or decrease with a factor of two or more so as to exclude the influence of meaningful restructuring activities (Vermoesen et al. 2013), when there are less than three FTEs to eliminate observations from companies founded solely for fiscal motives (Heyman et al. 2008), and when the financial year is shorter or longer than 12 months to ensure impeccable calculation of AQ. In every step, those cases for which the selection conditions could not be verified were deleted as well.[17] Up to this point, the dataset counts 69,571 firm-year observations.

The computation of AQ entails severe data demands (see Sect. 3), i.e., non-missing data over multiple years on non-cash working capital, cash flow from operations, net sales, and gross property, plant and equipment. For the computation of some variables, the applied AQ model implies that eight consecutive years of data are needed.[18] As the dataset for this study is limited to 14 years (1997–2010), a company-specific AQ can only be determined for firm-year observations within the 2003–2009 period. This

[11] Age is not winsorized because there is little or no doubt concerning the date of incorporation.

[12] The Cook's distances are clearly smaller than 1 (max = 0.011), underlining that winsorizing as described above is sufficient to deal with outliers in the data.

[13] A few exemptions, for instance for financial institutions, insurance companies, exchange brokers and hospitals, are made. These special cases produce financial statements in another, generally stricter, format (Huyghebaert et al. 2007).

[14] For Belgian financial statements, a distinction is made between a complete format and an abbreviated format. In this study, companies which submit financial statements in the abbreviated format are not included for two reasons. First, companies which report their accounts in the abbreviated format are not obliged to report their sales figure. This number is, however, needed to ensure proper application of the European Commission's SME definition further on. Secondly, financial statements in abbreviated format do not report a detailed interest expense number which is recommended in order to compute the cost of debt in an accurate manner.

[15] This sampling yields a rough dataset of 202,046 firm-year observations.

[16] With inconsistent data, we mean firm-year observations with financial statements where at least one account is not in line with one or more other accounts.

[17] 21,959 firm-year observations left the dataset because the restructuring criterion could not be verified due to the non-availability of data on total assets for the previous year.

[18] This is due to the five-year standard deviation and the leads and the lags in the Dechow and Dichev (2002) model, and due to the computation of the cash flow from operations, which demands information on the previous year (see Eq. 2).

Table 2 Sample selection method

	Drop	Sample (firm-years)
Initial sample		102,374
Restructuring	−25,991	
		76,383
Fiscal motives	−5698	
		70,685
Short or long fiscal year	−1114	
		69,571
Eight consecutive years for AQ	−55,632	
		13,939
Debt	−4267	
		9672
Missing values	−764	
Final sample		8908

selection step implies a major drop in sample size (from 69,571 to 13,939).

Finally, observations without debt and those with missing values for the control variables in the cost of debt regressions were dropped. Eventually, the sample selection leads to a final sample of 8908 firm-year observations from 2692 Belgian SMEs over the period 2003–2009. The sample selection procedure is summarized in Table 2.

5 Empirical results

5.1 Descriptives

Table 3 provides a breakdown of the sample by year, age and industry. It is important to note that, given the distribution in Panel A, potential concerns about under- or overrepresentation of certain years can be tempered. Panel B reveals that the dataset comprises rather mature SMEs as almost half of the firm-year observations concern companies older than 25 years. Median firm age is 24 years (not reported). With extremes of 6 and 108, age has a fairly wide distribution (not reported). Panel C shows in which industries (Nace-BEL 2003 sections) the sampled SMEs are active and indicates that the majority of the observations are from SMEs operating in the retail and manufacturing industries. Following the European SME definition, the final sample contains 443 firm-year observations from so-called microenterprises, 4769 firm-year observations from small enterprises and 3696 observations from medium-sized enterprises (not reported). To end, the financial statements were audited in 72.03 % of the cases (not reported).

Table 3 Sample breakdown by year, age and industry

Panel A: by year			Panel B: by age in years		
	#	%		#	%
2003	1306	14.66	>5, ≤10	815	9.15
2004	1281	14.38	>10, ≤15	1227	13.77
2005	1276	14.32	>15, ≤20	1624	18.23
2006	1156	12.98	>20, ≤25	1110	12.46
2007	1223	13.73	>25	4132	46.39
2008	1331	14.94			
2009	1335	14.99			
Total	8908	100.00	Total	8908	100.00

Panel C: by industry (Nace-BEL 2003)			
		#	%
Sections A, B, C	Agriculture, fishing, natural resources	70	0.79
Section D	Manufacturing	2866	32.17
Section F	Construction	701	7.87
Section G	Retailing	3092	34.71
Section H	Hotels and restaurants	88	0.99
Section I	Transport and communication	836	9.38
Section K	Services to companies	1255	14.09
Total		8908	100.00

Table 4 summarizes the variables incorporated in the cost of debt model. The mean of the cost of debt variable is about 9.6 % and is as such very similar to the values reported by Francis et al. (2005) and Pittman and Fortin (2004) (9.9 and 9.3 %, respectively) for samples of listed American firms, but somewhat higher than the value reported by Minnis (2011) in a study of American private companies, being 7.3 %. For Spanish SMEs, Hernández-Cánovas and Martínez-Solano (2007) find 11.5 %, a percentage that is a bit higher than the one reported in this study.

Next, Table 4 presents the distribution of the AQ measure from the Dechow and Dichev (2002) model as adjusted by McNichols (2002). The table shows a mean (median) of −0.045 (−0.037). Contrasting these values with the ones reported in existing literature reveals that, although the difference remains rather small, Belgian SMEs have a somewhat lower AQ than

Table 4 Descriptive statistics cost of debt regressions

	Mean	SD	p10	Median	p90	p90–p10
Cost of debt	0.096	0.128	0.023	0.053	0.195	0.172
AQ	−0.045	0.032	−0.086	−0.037	−0.013	0.073
Size	9.206	0.978	7.883	9.267	10.391	2.508
CF performance	0.095	0.140	−0.055	0.083	0.266	0.321
Age	3.243	0.587	2.485	3.219	4.043	1.558
Leverage	0.271	0.230	0.017	0.219	0.618	0.601
Interest coverage	15.831	45.783	−1.784	3.159	37.333	39.117
Asset tangibility	0.282	0.256	0.021	0.210	0.695	0.674
Negative equity	0.035	0.184	0.000	0.000	0.000	0.000
Growth	0.035	0.181	−0.162	0.033	0.228	0.390
Maturity	0.630	0.408	0.000	0.835	1.000	1.000
Secured status	0.440	0.496	0.000	0.000	1.000	1.000

N = 8908. *Cost of debt* = interest expense $t + 1$/average debt $t + 1$, *AQ*: see Sect. 3; Research design, *Size* = ln (net sales), *CF performance* = CFO/total assets, *Age* = ln [1 + (year observation − year incorporation)], *Leverage* = debt/total assets, *Interest coverage* = operating income/interest expense, *Asset tangibility* = net property, plant and equipment/total assets, *Negative equity* = dummy variable taking 1 if book value of equity is negative—0 otherwise, *Growth* = year-over-year percentage growth in sales, *Maturity* = debt with an initial maturity of more than 1 year/debt, *Secured status* = dummy variable taking 1 if some debt is secured—0 otherwise

American listed companies. The mean and median absolute values of the AQ measure reported in prior work on American listed companies (Francis et al. 2004, 2005; Dechow and Dichev 2002) range from more or less 0.026 to approximately 0.044 and from about 0.019 to about 0.031, respectively. This is lower than the absolute values reported in this study (i.e., 0.045 and 0.037). Since higher absolute values indicate lower AQ, the AQ of Belgian SMEs is lower. This is consistent with the finding of Leuz et al. (2003) that AQ tends to be better in Anglo-Saxon countries and with the finding of Burgstahler et al. (2006) and Ball and Shivakumar (2005) that unlisted companies typically have a lower earnings quality.

Compared to the Spanish SMEs in Hernández-Cánovas and Martínez-Solano (2010), the Belgian SMEs in this sample tend to be smaller, but exhibit a larger cash flow generating ability. Compared to the sample firms from another study on Spanish SMEs (Hernández-Cánovas and Martínez-Solano 2007), the Belgian SMEs in the sample are on average older and slightly less indebted. Compared to the American private companies in Minnis (2011), the Belgian SMEs in this sample are rather low-growth companies. They also have a healthier financial structure for the percentage of companies with negative equity in this sample is lower. Further, the American private companies from Minnis (2011) generate higher cash flows than the SMEs in this study. With respect to debt maturity, the proportion of long-term debt in total debt for the Belgian SMEs in this study is on average 63.0 %, compared to 29.1 % for the Spanish firms in García-Teruel et al. (2010). This indicates that our sample firms use considerably more long-term debt to satisfy their financing needs than Spanish firms do in García-Teruel et al. (2010). A considerable proportion (i.e., on average 44.0 %) of the debt of the sample firms is also secured, either by collateral or by state guarantee, although this figure remains far below the one reported for Finnish SMEs in Niskanen and Niskanen (2010) (93 %). When considering growth, we notice that the mean is slightly exceeding the median. Following Heyman et al. (2008), who also witnessed this phenomenon for Belgian small firms, this signals the presence of some high-growth companies.

To sketch a first picture of the relationship between AQ and the cost of debt, we take a closer look at the mean cost of debt across the AQ quintiles (see also Bharath et al. 2008; Francis et al. 2005). As Table 5 illustrates, SMEs with the best AQ (Q5) enjoy the lowest cost of debt, and the effective interest cost

decreases monotonously in function of AQ. The difference between Q5 and Q1 is not only highly statistically, but also economically significant. The 20 % observations with the best AQ (Q5) have on average a 4.5 percentage points lower cost of debt compared to the 20 % observations with the worst AQ (Q1). Bearing in mind the overall average of the cost of debt (9.6 %), this effect is substantial. However, one should not draw conclusions from these premature figures. It is important to extend this bivariate analysis with other factors that impact the cost of debt (Francis et al. 2005). A more nuanced picture is therefore provided in the next section.

The correlation matrix provided in Table 6 reveals that the correlation between the cost of debt and AQ is significantly negative (-0.118, $p < 0.01$), which is consistent with the results of the bivariate analysis and the expectation that the cost of debt decreases in AQ.

Table 5 Link between AQ and cost of debt

Quintile	Average cost of debt
Q5	0.073
Q4	0.090
Q3	0.094
Q2	0.106
Q1	0.117
Q5–Q1	−0.045
T statistic	10.29***
Prob > *T*	(0.000)

* Statistically significant at the 10 % level

** Statistically significant at the 5 % level

*** Statistically significant at the 1 % level

5.2 Regression results

To take into account the stability of the test variable over time, Fama and MacBeth (1973) regressions are preferred.[19] Table 7 depicts our regression results.[20] The third column reports the results from estimating a model where only the control variables from regression (1) are included (basic model). In the fourth column (full model), the basic model is extended with AQ. Both specifications include industry dummies.

In order to judge the relevance of the control variables, we considered the interpercentile range between the 10th and 90th percentile (see last column Table 4) multiplied by the absolute value of the estimated coefficient. Of the significant control variables, leverage appears to be the most relevant one, followed by maturity, secured status and asset tangibility. In the finance literature, a positive relationship between leverage and the cost of debt is assumed. The negative coefficient in this study is consistent with Minnis (2011), Francis et al. (2005), Beatty et al. (2002) and Booth (1992). There are several lines of thought. Firstly, following Minnis (2011), the finding could have an econometric cause as it is possibly driven by the significantly negative correlation between leverage and interest coverage (-0.292, $p < 0.01$). Secondly, Booth (1992) states that there might be economies of scale in lending. In an unreported test, we find supporting evidence for the idea that larger companies are more levered and have a larger amount of debt and a lower interest rate. An alternative explanation is that SMEs that can borrow cheaply from banks indeed employ a lot of bank credit in their struggle for the optimal capital structure.

The positive sign on maturity and the negative sign on secured status confirm agency theory: As shorter maturities and (more) collateral are, besides higher

[19] We ran a pooled OLS model with AQ_t as dependent variable and AQ_{t-1} as independent variable on a subsample with firm-years with two consecutive AQ figures ($N = 6093$). This way, the estimated coefficient on AQ_{t-1} can be considered an indication for the stability in the firm-specific AQ measure. We encounter a coefficient of 0.871 ($p < 0.01$) and interpret this as the AQ measure being subject to a substantial degree of persistence over time. The Pearson correlation figure between AQ_t and AQ_{t-1} ($0.860, p < 0.01$) confirms the conclusion above that the AQ of a company does not fluctuate a lot over time. Consequently, Fama and MacBeth (1973) regressions were favored instead of fixed effects regressions.

In the Fama and MacBeth (1973) procedure, year-specific OLS regressions are executed and the coefficients from these regressions are then aggregated into coefficients and standard errors across years. The Fama and MacBeth (1973) coefficients are just the unweighted average of the OLS coefficients, and the Fama and MacBeth (1973) standard errors are computed as the standard deviation of the OLS coefficients divided by the square root of the number of years in the estimation sample. The advantage of this method is that it enables to control for time effects in circumstances where panel data techniques cannot be used.

[20] We also estimated regressions in which we replaced the most collinear variables by their orthogonalized values. Orthogonalization was based on the pairwise Pearson correlation coefficients using a modified Gram–Schmidt procedure (Golub and Van Loan 1996). The regression results from those estimations (not reported) are similar to the ones reported in Table 7.

Table 6 Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Cost of debt	1											
(2) AQ	−0.118***	1										
(3) Size	0.010	0.125***	1									
(4) CF performance	0.078***	−0.045***	0.021*	1								
(5) Age	−0.056***	0.205***	0.010	−0.051***	1							
(6) Leverage	−0.398***	0.105***	−0.137***	−0.141***	0.155***	1						
(7) Interest coverage	0.091***	−0.058***	0.078***	0.165***	−0.049***	−0.292***	1					
(8) Asset tangibility	−0.209***	0.177***	−0.214***	0.114***	0.205***	0.540***	−0.144***	1				
(9) Negative equity	−0.012	−0.212***	−0.101***	−0.060***	−0.025**	0.296***	−0.070***	0.052***	1			
(10) Growth	0.033***	0.035***	0.141***	0.017	−0.047***	−0.021**	0.076***	−0.006	−0.033***	1		
(11) Maturity	0.073***	0.082***	−0.115***	0.188***	0.063***	−0.010	0.074***	0.349***	0.004	0.021**	1	
(12) Secured status	−0.084***	0.087***	0.147***	0.038***	−0.038***	0.005	−0.091***	−0.025**	−0.089***	0.008	0.058***	1

$N = 8908$. *Cost of debt* = interest expense $t + 1$/average debt $t + 1$, *AQ*: see Sect. 3; Research design, *Size* = ln (net sales), *CF performance* = CFO/total assets, *Age* = ln [1 + (year observation − year incorporation)], *Leverage* = debt/total assets, *Interest coverage* = operating income/interest expense, *Asset tangibility* = net property, plant and equipment/total assets, *Negative equity* = dummy variable taking 1 if book value of equity is negative—0 otherwise, *Growth* = year-over-year percentage growth in sales, *Maturity* = debt with an initial maturity of more than 1 year/debt, *Secured status* = dummy variable taking 1 if some debt is secured—0 otherwise

* Statistically significant at the 10 % level

** Statistically significant at the 5 % level

*** Statistically significant at the 1 % level

Table 7 Cost of debt regressions

	Exp sign	Basic model		Full Model	
		Coefficient	*p* value	Coefficient	*p* value
Constant		0.176***	0.000	0.144***	0.000
AQ	–			**−0.267*** **	**0.001**
Size	–	−0.002	0.232	−0.001	0.609
CF performance	±	0.029*	0.055	0.026*	0.072
Age	±	0.002	0.188	0.004**	0.034
Leverage	±	−0.244***	0.000	−0.243***	0.000
Interest coverage–	–	−0.000***	0.004	−0.000***	0.003
Asset tangibility	–	−0.020**	0.015	−0.015*	0.050
Negative equity	+	0.073***	0.000	0.062***	0.000
Growth	+	0.016	0.204	0.016	0.200
Maturity	?	0.025***	0.001	0.026***	0.001
Secured status	?	−0.018***	0.002	−0.016***	0.002
Primary sector	?	0.011	0.592	0.005	0.797
Manufacturing	?	−0.016***	0.010	−0.017***	0.007
Construction	?	−0.013*	0.085	−0.013*	0.091
Hotels and restaurants	?	0.029**	0.046	0.030**	0.044
Transport	?	−0.004	0.336	−0.007	0.168
Services	?	0.014*	0.078	0.016*	0.055
		Observations	8908	Observations	8908
		Average R^2	0.201	Average R^2	0.206
		F statistic	316.13***	*F* statistic	47.64***
		Prob > *F*	0.000	Prob > *F*	0.000

Cost of debt = interest expense $t + 1$/average debt $t + 1$, *AQ*: see Sect. 3; Research design, *Size* = ln (net sales), *CF performance* = CFO/total assets, *Age* = ln [1 + (year observation − year incorporation)], *Leverage* = debt/total assets, *Interest coverage* = operating income/interest expense, *Asset tangibility* = net property, plant and equipment/total assets, *Negative equity* = dummy variable taking 1 if book value of equity is negative—0 otherwise, *Growth* = year-over-year percentage growth in sales, *Maturity* = debt with an initial maturity of more than 1 year/debt, *Secured status* = dummy variable taking 1 if some debt is secured—0 otherwise, *Primary sector, Manufacturing, Construction, Hotels and restaurants, Transport, Services* are industry dummies—the largest industry (i.e., retailing) serves as base case. Bold indicates the variable of interest, i.e. the test variable.

* Statistically significant at the 10 % level

** Statistically significant at the 5 % level

*** Statistically significant at the 1 % level

interest rates, alternative answers to information asymmetry problems, they allow for lower interest rates.

The coefficient of asset tangibility indicates that a larger proportion of tangible assets implies a higher liquidation value of the firm, which may in turn lead to a lower interest rate (Minnis 2011).

With respect to the remaining significant control variables, interest coverage and negative equity have the expected sign. As in Hernández-Cánovas and Martínez-Solano (2010), the estimated coefficient on CF performance is significantly positive ($p < 0.1$), indicating that SMEs with more expensive debt need higher cash flow levels to prevent debt default. For age we find, in contrast to the relationship lending argument, a significantly positive coefficient in the full model, but no significant relationship in the basic model. The findings related to age are consistent with

the inconclusive nature of the relationship lending theory (Howorth and Moro 2012) and add to the idea that there is more than relationship lending.

As concerns the industry dummies, Table 7 shows that in both models, compared to retailing, the manufacturing industry has a significantly ($p < 0.01$) lower cost of debt.[21] Service companies and hotels and restaurants tend to have a somewhat higher cost of debt than retailers, while the construction sector has a slightly lower cost of debt than the retailing industry, but the significance of these effects is lower. The industry dummies capture the impact of any unobserved heterogeneity across industries, such as, for example, differences in operating leverage.

We conclude that the control variables largely behave as established in prior literature. As concerns the AQ measure, the results of the full model in Table 7 indicate that the coefficient on AQ is highly statistically significant at the 1 % level and that adding AQ slightly raises the explanatory power of the model in terms of R^2. This highlights the fact that AQ (i.e., our proxy for FRQ) is able to explain some of the variation in the cost of debt on top of the more traditional cost of debt determinants in the model. Further, the estimated coefficient on AQ has a negative sign. Since higher values for the AQ measure imply higher AQ, this indicates that the cost of debt is lower as AQ is higher. The negative relationship between AQ and the cost of debt reported by Bharath et al. (2008) and Francis et al. (2005) for listed American firms thus also holds for (Belgian) SMEs. Additionally, the effect is not only statistically significant, but also economically relevant. The interest rate differential between the 10th and the 90th AQ percentile equals on average 0.01949 (i.e., the distance between 10th and 90th AQ percentile multiplied by the absolute regression coefficient on AQ or 0.073×0.267), implying that an SME that is able to improve its AQ from the 10th percentile to the 90th percentile enjoys, on average, a decline in the cost of debt of no less than 194.9 basis points or 1.949 percentage points. Taking into account an average amount of debt within the sample of € 7,362,291, an SME enhancing its AQ from the 10th to the 90th percentile realizes a gross saving in interest expense in absolute terms of € 143,491 on average, which is 24.9 % of average operating income.[22]

5.3 Robustness tests

Some additional tests were run to examine the robustness of the results to the method used to deal with outliers, to the distribution of the sample observations over industries, and to the measurement of FRQ and the cost of debt.

Firstly, as concerns the treatment of outliers, an alternative to the winsorizing technique which we used in the primary analyses is to truncate or trim the data, i.e., removing influential cases. If, in parallel with the primary analyses, we truncate the cost of debt at the 5th percentile and the 95th percentile, while simultaneously truncating all continuous independent variables except for age at the 1st and the 99th percentiles, the results for the test variable in regression (1) (not reported) are statistically similar to those in Table 7, although the size of the AQ effect is smaller.

Secondly, in order to test whether the results are not driven by the two dominant industries in our sample (i.e., retailing and manufacturing), regression (1) is estimated using a subsample excluding firm-year observations from the retailing and manufacturing industries. The estimation results (not reported) show that the result on the test variable holds. This confirms that the results in this research are robust to potential industry effects.

Thirdly, various tests were performed to verify the robustness of the results to the measurement of FRQ and the cost of debt. As a first test of the robustness of the results to the proxy of FRQ, the regressions in Table 7 were repeated with the absolute residuals from estimating Eq. (2). As proposed by Dechow and Dichev (2002), the absolute residuals can serve as an alternative AQ measure for the standard deviation of residuals. The regressions were run both on the sample used in the main analyses and on a larger sample of 19,044 firm-years (taking into account that working with the absolute residuals entails less data requirements). The results in both samples confirm the ones in Table 7.

In a second test, the procedure described in Beuselinck and Manigart (2007) was followed to

[21] Alternatively, we performed a regression with only two industry dummies, one for each of the two main industries (i.e., retailing and manufacturing), using all other industries as the base case. This confirms that manufacturing has a significantly ($p < 0.01$) lower cost of debt.

[22] The absolute saving of a one standard deviation gain in AQ is on average € 62,874 or 10.9 % of average operating income.

verify whether SMEs with a higher AQ reported losses in a more timely manner. To this end, regression (3), where i indexes firms and t indexes years, was estimated.

$$\begin{aligned}\Delta NI_{i,t} &= \tau_0 + \tau_1 * NEG(\Delta NI)_{i,t-1} + \tau_2 * \Delta NI_{i,t-1} \\ &+ \tau_3 * NEG(\Delta NI)_{i,t-1} * \Delta NI_{i,t-1} + \tau_4 * \\ &\text{Above median } AQ_i + \tau_5 * \text{Above median } AQ_i \\ &* NEG(\Delta NI)_{i,t-1} + \tau_6 * \text{Above median } AQ_i * \\ &\Delta NI_{i,t-1} + \tau_7 * \text{Above median } AQ_i * NEG(\Delta NI)_{i,t-1} \\ &* \Delta NI_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

with ΔNI_t = the change in net income at time t, scaled by total assets at the beginning of year t, $NEG(\Delta NI)_{t-1}$ = dummy taking 1 if the prior-period change in net income is negative, 0 otherwise, Above median AQ = dummy taking 1 if the observation has a better AQ than the median observation (considering all years), 0 otherwise.

The idea is that if decreases in prior-period earnings show a higher tendency to reverse than increases in prior-period earnings, this points to a higher willingness to recognize losses timely, to more conservative and realistic financial statements and thus to higher reporting quality. Given that the sum of the coefficients $\hat{\tau}_2$ and $\hat{\tau}_3$ is significantly negative, earnings decreases are generally recognized timely in our dataset of SMEs. However, there is evidence that losses are recognized less timely than gains as $\hat{\tau}_3$ is significantly positive. More interestingly, since $\hat{\tau}_7$ is significantly negative, SMEs with above median AQ recognize losses more timely than gains compared to SMEs with below median AQ. All findings are confirmed both when using income before tax ($N = 13{,}804$) and income after tax ($N = 13{,}939$) as well as when contrasting the 20 % observations with the best AQ with the 20 % observations with worst AQ ($N = 5521$ and $N = 5575$ when using income before tax and after tax, respectively). This justifies our choice for AQ as proxy for FRQ.

In a third test, as in García-Teruel et al. (2010), we have applied the procedure by Bharath et al. (2008) to examine the predictability of future operating cash flows depending on the AQ. We executed regressions in the AQ quintiles with the next year's cash flow from operations as the dependent, and the current year's operating income and cash flow from operations as the independent variables. Since the fit is way better in the highest AQ quintile ($N = 2788$) (i.e., best AQ), compared to the lowest AQ quintile ($N = 2787$) (i.e., worst AQ), we can conclude from this analysis that the predictability of the cash flows from operations rises as the AQ rises. This confirms that SMEs with higher values of AQ have more informative earnings.

For this study, no loan-specific data were available and the effective interest cost was used as a measure of the cost of debt. To test the robustness of the results to this proxy, we repeated the analysis with a different dependent variable: the Cost of new debt. The measurement of the cost of new debt is clarified below in Eqs. (4) and (5). Note that, in line with the main analyses, we consider the cost of new debt in period $t + 1$. Of course, these calculations are only possible when there is indeed an increase in the debt level, which further reduces the size of the sample that can be used in the analyses ($N = 6124$). It is also important to note that the computations below only yield an approximate measure of the cost of new debt.

$$\text{New debt}_{i,t+1} = \text{Debt}_{i,t+1} - \text{Debt} > 1 \text{ year}_{i,t} \quad (4)$$

$$\begin{aligned}\text{Cost of new debt}_{i,t+1} = &((\text{Debt} > 1 \text{ year}_{i,t}/\text{Debt}_{i,t+1}) \\ &* \text{Cost of debt}_{i,t} \\ &- \text{Cost of debt}_{i,t+1}) \\ &* (-(\text{Debt}_{i,t+1}/\text{New debt}_{i,t+1}))\end{aligned} \quad (5)$$

We encounter a mean cost of new debt of 8.6 %. A t test with unequal variances indicates that the SMEs with the 20 % best scores on the AQ dimension pay considerably less on new debt than the SMEs with the 20 % worst scores: on average 2.8 % less (significant at the 1 % level). The estimation result of a regression with the cost of new debt instead of the cost of debt as the dependent variable is largely in line with the main analysis. The effect of AQ seems to be somewhat less sizeable when only new debt is considered: The difference between the 10th and 90th AQ percentile has decreased to on average 127.8 basis points.

As a final robustness test, we restricted the sample to the audited firms ($N = 6416$). The results from Table 7 were confirmed. As such, this work shows that our measure is able to further differentiate within the group of audited firms.

6 Conclusion

Exploring a large longitudinal dataset on Belgian SMEs, this paper provides evidence that poorer FRQ, as proxied by lower accruals quality (AQ), is associated with a higher effective interest cost, even in a context that might be characterized by relationship lending (de Bodt et al. 2005; Degryse and Van Cayseele 2000). More specifically, the regression results show that, even after controlling for other company characteristics, the effective interest cost of an SME at the 10th AQ percentile is on average 194.9 basis points higher than the effective interest cost of an SME at the 90th AQ percentile. The negative association between FRQ and the cost of debt for SMEs is confirmed when only new debt is considered.

The results in this article are consistent with the idea that earnings are important for creditors in predicting SMEs' reimbursement capacity (i.e., future cash flows) and that less estimation error in accruals enhances earnings' ability to predict future cash flows. These findings deliver evidence of an important economic benefit of financial reporting for SMEs, to wit, the potential to reduce information asymmetry between SMEs and their creditors through higher-quality financial reporting. To the extent that opportunistic earnings management reduces AQ, SME managers can learn from these results that managing earnings has the potential disadvantage of increasing the effective interest cost. Preparing high-quality, transparent financial statements might therefore be worthwhile. Besides to SME managers, the results are relevant for regulators for they indicate that the information in SMEs' financial statements is used by and thus relevant for market participants. More specifically, to the extent that flexibility in accounting rules impairs the quality of financial reporting, our findings could be interpreted as a call for stricter accounting regulation with less managerial discretion as this may support SMEs in their struggle to obtain bank loans at lower rates.

Although the measurement of FRQ by AQ has important advantages, it also imposes serious data requirements which limit the external validity of the results to companies with a minimum age of 8 years. Verifying the results of this study on a sample of young companies seems then also an interesting avenue for future research.

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References

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics, 39*(1), 83–128. doi:10.1016/j.jacceco.2004.04.001.

Beatty, A., Ramesh, K., & Weber, J. (2002). The importance of accounting changes in debt contracts: The cost of flexibility in covenant calculations. *Journal of Accounting and Economics, 33*(2), 205–227. doi:10.1016/S0165-4101(02)00046-0.

Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance, 22*(6–8), 613–673. doi:10.1016/S0378-4266(98)00038-7.

Beuselinck, C., & Manigart, S. (2007). Financial Reporting quality in private equity backed companies: The impact of ownership concentration. *Small Business Economics, 29*(3), 261–274. doi:10.1007/s11187-006-9022-1.

Bharath, S. T., Sunder, J., & Sunder, S. V. (2008). Accounting quality and debt contracting. *The Accounting Review, 83*(1), 1–28. doi:10.2308/accr.2008.83.1.1.

Booth, J. R. (1992). Contract costs, bank loans, and the cross-monitoring hypothesis. *Journal of Financial Economics, 31*(1), 25–41. doi:10.1016/0304-405X(92)90010-U.

Burgstahler, D. C., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in european private and public firms. *The Accounting Review, 81*(5), 983–1016. doi:10.2308/accr.2006.81.5.983.

de Bodt, E., Lobez, F., & Statnik, J.-C. (2005). Credit rationing, customer relationships and the number of banks: An empirical analysis. *European Financial Management, 11*(2), 195–228. doi:10.1111/j.1354-7798.2005.00282.x.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics, 18*(1), 3–42. doi:10.1016/0165-4101(94)90016-7.

Dechow, P. M., & Dichev, I. D. (2002). The Quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review, 77*(supplement 1), 35–59. doi:10.2308/accr.2002.77.s-1.35.

Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics, 25*(2), 133–168. doi:10.1016/S0165-4101(98)00020-2.

Degryse, H., & Van Cayseele, P. (2000). Relationship Lending within a bank-based system: Evidence from European small business data. *Journal of Financial Intermediation, 9*(1), 90–109. doi:10.1006/jfin.1999.0278.

Deloof, M., Lagaert, I., & Verschueren, I. (2007). Leases and debt: Complements or substitutes? Evidence from Belgian SMEs. *Journal of Small Business Management, 45*(4), 491–500. doi:10.1111/j.1540-627X.2007.00224.x.

Dennis, S., Nandy, D., & Sharpe, I. G. (2000). The determinants of contract terms in bank revolving credit agreements. *Journal of Financial and Quantitative Analysis, 35*(1), 87–110. doi:10.2307/2676240.

Easley, D., & O'Hara, M. (2004). Information and the cost of capital. *The Journal of Finance, 59*(4), 1553–1583. doi:10.1111/j.1540-6261.2004.00672.x.

Fama, E. F., & MacBeth, J. D. (1973). Risk, return, and equilibrium: empirical tests. *Journal of Political Economy, 81*(3), 607–636. doi:10.1086/260061.

Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Cost of equity and earnings attributes. *The Accounting Review, 79*(4), 967–1010. doi:10.2308/accr.2004.79.4.967.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics, 39*(2), 295–327. doi:10.1016/j.jacceco.2004.06.003.

García-Teruel, P. J., Martínez-Solano, P., & Sánchez-Ballesta, J. P. (2010). Accruals Quality and Debt Maturity Structure. *Abacus, 46*(2), 188–210. doi:10.1111/j.1467-6281.2010.00312.x.

Golub, G. H., & Van Loan, C. F. (1996). *Matrix computations* (3rd ed.). Baltimore: Johns Hopkins University Press. ISBN 0-8018-5414-8.

Grunert, J., & Norden, L. (2012). Bargaining power and information in SME lending. *Small Business Economics, 39*(2), 401–417. doi:10.1007/s11187-010-9311-6.

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365–383. doi:10.2308/acch.1999.13.4.365.

Hernández-Cánovas, G., & Martínez-Solano, P. (2007). Effect of the number of banking relationships on credit availability: Evidence from panel data of Spanish small firms. *Small Business Economics, 28*(1), 37–53. doi:10.1007/s11187-005-6704-z.

Hernández-Cánovas, G., & Martínez-Solano, P. (2010). Relationship lending and SME financing in the continental European bank-based system. *Small Business Economics, 34*(4), 465–482. doi:10.1007/s11187-008-9129-7.

Heyman, D., Deloof, M., & Ooghe, H. (2008). The financial structure of private held Belgian firms. *Small Business Economics, 30*(3), 301–313. doi:10.1007/s11187-006-9031-0.

Howorth, C., & Moro, A. (2012). Trustworthiness and interest rates: An empirical study on Italian SMEs. *Small Business Economics, 39*(1), 161–177. doi:10.1007/s11187-010-9285-4.

Huyghebaert, N., Van de Gucht, L., & Van Hulle, C. (2007). The choice between bank debt and trace credit in business start-ups. *Small Business Economics, 29*(4), 435–452. doi:10.1007/s11187-006-9005-2.

Karjalainen, J. (2011). Audit quality and cost of debt capital for private firms: Evidence from Finland. *International Journal of Auditing, 15*(1), 88–108. doi:10.1111/j.1099-1123.2010.00424.x.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics, 69*(3), 505–527. doi:10.1016/S0304-405X(03)00121-1.

Leuz, C., & Verrecchia, R. E. (2005). *Firms' capital allocation choices, information quality, and the cost of capital*. Working paper SSRN. doi:10.2139/ssrn.495363

McNichols, M. F. (2002). Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review, 77*(supplement 1), 61–69. doi:10.2308/accr.2002.77.s-1.61.

Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private U.S. firms. *Journal of Accounting Research, 49*(2), 457–506. doi:10.1111/j.1475-679X.2011.00411.x.

Niskanen, M., & Niskanen, J. (2010). Small business borrowing and the owner-manager agency costs: Evidence on finnish data. *Journal of Small Business Management, 48*(1), 16–31. doi:10.1111/j.1540-627X.2009.00284.x.

Ooghe, H., Vander Bauwhede, H., & Van Wymeersch, C. (2012). *Handboek financiële analyse van de onderneming* (4th ed.). Intersentia, Antwerp, 383 (part 1) + 205 (part 2) pages. ISBN: 978-94-000-0303-3.

Ortiz-Molina, H., & Penas, M. F. (2008). Lending to small businesses: The role of loan maturity in addressing information problems. *Small Business Economics, 30*(4), 361–383. doi:10.1007/s11187-007-9053-2.

Peltoniemi, J. (2007). The benefits of relationship banking: Evidence from small business financing in Finland. *Journal of Financial Services Research, 31*(2–3), 153–171. doi:10.1007/s10693-007-0009-0.

Peltoniemi, J., & Vieru, M. (2013). Personal guarantees, loan pricing, and lending structure in finnish small business loans. *Journal of Small Business Management, 51*(2), 235–255. doi:10.1111/jsbm.12015.

Pittman, J. A., & Fortin, S. (2004). Auditor choice and the cost of debt capital for newly public firms. *Journal of Accounting and Economics, 37*(1), 113–136. doi:10.1016/j.jacceco.2003.06.005.

Rajan, R. G. (1992). Insiders and outsiders: The choice between informed and arm's-length debt. *The Journal of Finance, 47*(4), 1367–1400. doi:10.1111/j.1540-6261.1992.tb04662.x.

Scherr, F. C., & Hulburt, H. M. (2001). The debt maturity structure of small firms. *Financial Management, 30*(1), 85–111. doi:10.2307/3666392.

Sharpe, S. A. (1990). Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. *The Journal of Finance, 45*(4), 1069–1087. doi:10.2307/2328715.

Van Caneghem, T., & Van Campenhout, G. (2012). Quantity and quality of information and SME financial structure. *Small Business Economics, 39*(2), 341–358. doi:10.1007/s11187-010-9306-3.

Vermoesen, V., Deloof, M., & Laveren, E. (2013). Long-term debt maturity and financing constraints of SMEs during the Global Financial Crisis. *Small Business Economics, 41*(2), 433–448. doi:10.1007/s11187-012-9435-y.