The Usefulness of Financial Reporting Quality in The Access to Bank Debt For Private Firms

Abstract

With this paper we provided further evidence on the relationship between financial reporting quality (FRQ) and access to bank debt for private firms. Due to data requirements, most of the archival studies to date on FRQ, in the private firm setting, are based on data of the larger private firms. Smaller firms are often neglected. Differences in data availability between small and large private firms, stem from different regulatory treatment, and are often disregarded by previous research. Accordingly, private firms are typically beheld as a homogeneous group. Employing an extensive proprietary private dataset of 1,435,729 firm-year observations corresponding to 311,985 unique private firms between 2010 and 2020, we expand on previous empirical research by showing that the association between FRQ and bank debt is not the same for all private firms. Our results suggest that the proposed benefits of FRQ in the access to bank debt are weaker for small and micro firms. Our study is the first to show that the association between FRQ and bank debt is moderated by different disclosure requirements, which are based on firm size. Furthermore, we show that the lower the financial health of a firm, the stronger the effect of FRQ on bank debt. Our study therefore complements the literature on the importance of financial reporting for private firms.

1. Introduction

The access to external funds is an essential factor for a firm's growth potential and, consequently, also vital for economic growth in general. As private firms are more restricted in their access to capital markets, debt financing is one of

their most important sources of external funds. The ensuing relationship from this type of financing, is one that is characterised by information asymmetry and moral hazards between creditors and their debtors. In the case of private firms, these creditors are primarily banks (Collis & Jarvis, 2002; Niemi & Sundgren, 2012; Nair & Rittenberg, 1983).

Financial statements have the potential to alleviate the information asymmetry between creditors and debtors as they disclose information about firms' performance and financial position. The main concern of a creditor is to recover its principal. Therefore, banks make use of these financial reports in the credit review process (Niemi & Sundgren (2012), García-Teruel et al. (2014)). The primary use is to assess the credit risk (i.e. the chance a debtor will not be able to make the necessary payments). The quality of the information used in the review process, will affect the accuracy of the credit risk assessment. Therefore, investigating the quality of the financial statements is an important and continuing concern in accounting research (Costello & Wittenberg-Moerman (2011)). We observe a growing interest in empirical research on this subject over the last decade. A growing body of research reveals that higher financial reporting quality (FRQ) benefits private firms by either improving their access to external funding (see e.g., García-Teruel et al. (2014); Van Caneghem & Van Campenhout (2012); De Meyere et al. (2018)) or by reducing their cost of capital (see e.g.,Vander Bauwhede et al. (2015); Beltrame et al. (2017)).

Most of the archival studies to date on FRQ in the private firm setting, however, are based on data of the larger private firms (see e.g., De Meyere et al. (2018), Beltrame et al. (2017), Elemes & Filip (2021)). The smaller firms are often taken out of study samples because of data restrictions. This is not surprising given the fact that smaller private firms, having less stringent reporting requirements, are more informational opaque.

Bernard et al. (2016) argue that differences in data availability among subsamples of private firms might affect conclusions of studies that rely on such data. Their results suggests that failing to take in account these differences "can lead to conflicting evidence in the literature" (Bernard et al., 2016). Com-

parably, Beuselinck et al. (2021) assert that scholars should be aware of differences in data availability among private firms. Differences in data availability between small and large private firms stem from different regulatory treatment and are often disregarded by previous research. Accordingly, private firms are typically beheld as a homogeneous group. As a result, Beuselinck et al. (2021) underscores the need for researchers to "critically question the generalisability of earlier results to the general population of private firms" and calls for studies to address these issues "by revisiting prior studies or by using alternative data sources".

The fact that these smaller firms are unrepresented in previous research would, of its own, be enough to prompt an investigation into the generalisability of earlier findings. On top of that, smaller firms also differ on a number of factors from larger firms, which, in turn, influences the role of financial reporting in the access to bank debt. Concentrated ownership (owner managers) in smaller firms results in less/other agency problems. Smaller firms typically have closer relationships with their bank which leads to direct/private communication channels and banks having access to key insider information (see e.g. Berger & Udell (1998); Kitching et al. (2015)).

This study intends to fill this void by examining whether findings of previous studies can be generalized to the entire sample of private firms, including the smaller ones. We contribute to the literature in several ways. Employing an extensive proprietary private dataset of 1,435,729 firm-year observations corresponding to 311,985 unique private firms between 2010 and 2020, we expand on previous empirical research by showing that the association between FRQ and bank debt is not the same for all private firms. This study is, to the best of our knowledge, the first to investigate the association between FRQ and access to bank debt for the smallest private firms (i.e. small and micro firms). Small and micro firms make up a significant part of the European economy. Micro firms alone make up 93% of all companies in the European Union (the EU28) and contribute the largest share of value added at 21%. Combined with small firms, they contribute to around 50% of EU employment. Our results suggest that the

proposed benefits of FRQ in the access to bank debt are weaker for small and micro firms. Our study is the first to show that the association between FRQ and bank debt is moderated by different disclosure requirements, based on firm size. Furthermore, we show that the lower the financial health of a firm, the stronger the effect of FRQ on bank debt. Our study therefore complements the literature on the importance of financial reporting for private firms.

Furthermore, by including small and micro firms in our study, we add to the discussion with regards to limiting the financial reporting requirements for smaller firms. Based on the argument that, for smaller firms, the benefits of financial reporting requirements do not justify the costs, there have been regulatory changes towards scaling down these requirements. An example is The European Union's new Accounting Directive (2013/34/EU) which allows Member States to considerably reduce micro-entities' financial reporting requirements. While these policy measures can been viewed as efforts to minimize the burdens of preparing financial statements, which are larger for smaller firms, some authors have advised caution when deciding to loosen disclosure requirements for these smaller firms (Kitching et al., 2015). Kitching et al. (2015) argues that requiring a higher level of detail in the financial statements could improve private firms' access to finance. Therefore, the findings presented in this study are relevant for legislators and policy makers as well.

The rest of this paper is structured as follows. Section 2 discusses related literature and states our main hypothesis. Section 3 gives an overview of the research design and data. In section 4 the main results of our analysis are presented and section 5 concludes.

2. Literature review and hypothesis development

Compared to larger listed firms, private firms have less reporting obligations (CNA Interpreta (2011); Ceustermans & Breesch (2017)). For example, the cash flow statement is not required in the financial report of private firms in many of the countries within the EU (e.g.: Austria, Belgium, the Czech Republic, Den-

mark, France, Germany, Greece, Italy, and the Netherlands) (CNA Interpreta (2011)). Furthermore, Hope & Vyas (2017) point out that private firms publish less non-accounting information in comparison with listed firms. In the absence of other sources of information, financial statements are arguably even more important in reducing information asymmetries with outside stakeholders.

Therefore, private firms exhibit a higher degree of information opaqueness (Berger & Udell (1998)). This opaqueness makes that private firms experience more information asymmetries with their stakeholders (Van Caneghem & Van Campenhout (2012)). By publishing financial reports, firms can reduce these asymmetries.

The main users of private firms' financial statements are their lenders, which are primarily banks (Niemi & Sundgren (2012); Nair & Rittenberg (1983)). Collis & Jarvis (2002) find that, in a private firm context, maintaining relations with banks is one of the roles of the annual financial statements. The banks' primary use of the financial statements is to assess the firm's ability to repay its debt (i.e. the creditworthiness). In other words, banks will assess the creditor's ability to generate sufficient cash-flows (Minnis (2011)). Therefore, if banks make use of private firms' financial statements to assess their creditworthiness, the quality of those reports is likely to be considered in the credit risk assessment process of those private firms. This consideration for FRQ by lenders is now well established from a variety of studies (e.g. :(Van Caneghem & Van Campenhout, 2012; Vander Bauwhede et al., 2015; Beltrame et al., 2017; García-Teruel et al., 2014, 2010)). From the perspective of a creditor, FRQ relates to the accuracy of the credit risk assessment of their debtors. Earnings quality is, thus, a commonly used metric for FRQ García-Teruel et al. (2014)[1].

Studying the usefulness of accounting in private firms Hope et al. (2017) not only find that accounting information is useful, but that higher FRQ improves this usefulness. There are several published studies that have shown that FRQ has a positive effect on access to debt as well. Van Caneghem & Van Camp-

[1]See section **??** for a detailed explanation on earnings quality.

enhout (2012) show that there is a positive relation between the quality of financial reporting information and the leverage of SMEs. García-Teruel et al. (2014) studies the relationship between earnings quality, a prevalent measure for FRQ, and access to bank debt for a sample of Spanish SMEs. Multiple earnings quality metrics are applied. They find that SMEs with higher earnings quality have better access to bank debt. García-Teruel et al. (2010) examine the relation between earnings quality and the debt maturity structure of Spanish listed firms. Their findings show that firms with higher earnings quality have better access to longer debt terms, which is consistent with the view that FRQ is an instrument to reduce information asymmetries. These findings corroborate the results of De Meyere et al. (2018), where a positive relation between FRQ and the proportion of long-term debt in total debts is found for a sample of Belgian private firms. Consequently, it seems evident that FRQ would be a contributing factor in regard to private firms' access to external financial resources.

In related fields of the accounting literature, the effects of FRQ receive increasingly more attention. A number of papers already studied the effects of FRQ on the cost of debt for private firms. The underlying rationale is that lenders (in the case of private firms these are mostly financial institutions) will reward companies who provide high quality information with lower interest rates. Overall the consensus seems to be that a higher level of FRQ leads to a lower cost of debt (Vander Bauwhede et al., 2015; Beltrame et al., 2017; Bharath et al., 2008). Vander Bauwhede et al. (2015), using a dataset of Belgian SMEs between 1997 and 2010, find that the cost of debt rises with lower FRQ. Similarly Beltrame et al. (2017) find a negative relation between earnings quality and cost of debt for a sample of Italian SMEs. Therefore, Beltrame et al. (2017) argue, the information gap reduces with rising earnings quality as it allows creditors to make a more substantiated assessment of the risk they face.

The combination of aforementioned findings provides support for the conceptual premise that FRQ improves the access to bank finance. We formulate the following hypothesis:

Hypothesis 1 *There is a positive association between financial reporting quality and access to bank debt for the entire group of private firms.*

While the positive effect of FRQ on access to bank debt within the context of private firms has already been reported, previous research mainly focused on the large private firms because of data limitations.Bernard et al. (2016) argue it is important to take in account different disclosure incentives among private firms, as these differences affect data availability which in turn can affect the resulting conclusions. Similarly, Beuselinck et al. (2021) discuss the importance of data availability for accounting research and how it is determined by (supra)national disclosure regulation. In the European Union, this would be Directive 2013/34/EU. Under the accounting Directive 2013/34/EU, firms are subjected to incremental disclosure requirements based on their size. Specifically, the EU's accounting directive distinguishes between 4 different firm sizes: micro, small, medium, and large. These size classes are defined on basis of three criteria: balance sheet total, net turnover, and the average number of employees during the financial year. Thus, the classification of a firm as either micro, small, medium, or large, determines the level of disclosure requirements, which in turn determines the amount of information a firm needs to disclose (Beuselinck et al., 2021).

It is possible that these differences in disclosure ultimately affect the usefulness of financial reporting and FRQ for the stakeholders (i.e. the creditors). That is to say, the lack of more detailed information could increase creditors' tendency to resort to other (i.e. private) sources of information. This would make the financial reports, and therefore also the FRQ, less important in the access to debt. This is especially relevant for smaller private firms, for whom some scholars have suggested that information asymmetries already are more easily resolved through private channels Burgstahler et al. (2006); Ball & Shivakumar (2005). It is possible that a lower amount of information in financial statements increases the propensity to use other competing sources of information. Thereby possibly making the FRQ less important in the access to debt.

Kitching et al. (2015) provide some evidence for this premise, they argue that allowing smaller firms to have reduced disclosure requirements might have a negative impact on access to bank credit. More importantly, their survey data revealed that stakeholders of financial statements differ significantly in their ability to access other (i.e. private) information channels. Consequently, stakeholders with greater flexibility to resort to other sources of information, like banks, perceive financial statements that provide less information more easily as less useful. Similarly, Breuer et al. (2018) shows that the financial statements of firms with lower disclosure requirements are consulted less by banks.

Due to the incremental disclosure requirements under the accounting Directive 2013/34/EU, smaller firms have reduced disclosure requirements compared to larger firms. Aforementioned findings lead us to expect that this would negatively affect the impact of FRQ on bank debt. We propose the following hypothesis.

Hypothesis 2 *The positive association between financial reporting quality and bank debt is weaker for smaller firms.*

Leblebici & Salancik (1981) argue that banks collect information to reduce the uncertainty around the probability a debtor will be able to pay back a loan. FRQ will improve creditors' precision when determining a debtors creditworthiness. Cassar et al. (2015) find that the positive effects (i.e. lower cost of debt) of accruals accounting (relative to cash accounting) are greatest for firms with lower credit scores. This indicates that higher quality accounting information is more important to banks when the uncertainty of recovering their principal (i.e. the credit risk) is higher. De Meyere et al. (2018) find that the positive effect of FRQ, on debt maturity, is greater for smaller firms. They reason that this is due to the higher fundamental risk of smaller firms. When a firm has a lower financial health, the credit risk will be higher. Therefore, we argue, the importance of FRQ in the access to debt will increase with lower financial health.

Despite the fact that qualitative financial information appears to improve a

firms' ability to access credit, it seems unlikely that this effect is equal across all private firms. Instead, aforementioned findings suggest that a firm's FRQ would be less effective in reducing information asymmetry when there is less uncertainty concerning the ability to repay their debt. Conversely, when there is more uncertainty, and the credit risk is higher, we posit that FRQ will be more important in the access to bank loans. This leads us to the following hypothesis.

Hypothesis 3 *The positive association between bank debt and financial reporting quality is stronger for firms who have lower financial health.*

Finally, outside the accounting literature there is evidence in support of our hypothesis as well. Dell'Ariccia & Marquez (2004) describes how banks, when entering foreign markets, focus their lending activities on those firms with better accounting and reporting standards. The uncertainty about the quality of available information about the debtors is the main impediment to expand their activities for these entrant banks (Dell'Ariccia & Marquez, 2004). Not only does this finding illustrate that FRQ lowers information asymmetries. The fact that banks choose to focus on serving firms with better accounting and reporting standards when entering new markets, while they would focus less on these firm aspects in their home market, might be indicative of the idea that FRQ is more important in settings which entail higher risk.

3. Research design and data

3.1. Financial reporting quality

Lev (2018) studies the usefulness of financial reporting information. One of the measures he applies to gauge the usefulness is by looking at the ability of the reported earnings to predict future earnings and cash-flows. Future cash-flows are the means by which companies will pay back their debt and are therefore crucial in assessing the credit risk. Dechow (1994) and Dechow et al. (1998) found that earnings are preferable to current cash-flows for predicting future

cash-flows. As a result, higher earnings quality improves the accuracy of future predicted cash-flows and thus the quality of financial reports for creditors. As it allows for a more reliable risk assessment. This is especially relevant taking in account the fact that private firms typically will not publish a cash flow statement (see supra). Our employed metric for FRQ is accrual quality, which measures the abnormal discretionary accruals. Discretionary accruals are, to some extent, based upon assumptions and estimations, and are therefore subject to estimation errors and managerial manipulation. Dechow & Dichev (2002) call these estimation errors noise and show that the quality of earnings decreases with higher noise (i.e. more estimation errors in the accruals). Accordingly, more noise in the accruals (i.e. lower AQ) would signal less reliable earnings and make it harder for lenders to estimate future cash-flows and make an accurate risk assessment (Bharath et al. (2008)).

We use an accrual quality (AQ) proxy that stems from the prominent model developed by Dechow & Dichev (2002) (Eq.1), which uses working capital accruals to measure accrual quality.

$$\frac{WCA_{i,t}}{TotalAssets_{i,t}} = \alpha_0 + \beta_1 \frac{CFO_{i,t-1}}{TotalAssets_{i,t}} + \beta_2 \frac{CFO_{i,t}}{TotalAssets_{i,t}} + \beta_3 \frac{CFO_{i,t+1}}{TotalAssets_{i,t}} + \varepsilon_{i,t} \tag{1}$$

Dechow & Dichev (2002) regress working capital accruals (WCA) from firm i in year t on cash flow from operations (CFO) in year t, $t-1$ and $t+1$. All variables are scaled against average total assets[2]. First we run a cross-sectional regression of the model (Eq.1) for each industry/year combination. The industry classification is based on the two-digit NACE-code. The ε_i, t represents the residuals and its absolute value ($|\varepsilon_i, t|$) inversely measures the accrual quality. Therefore, in line with Beltrame et al. (2017), we use the negative absolute value

[2]Average total assets for firm i in year t are calculated as ($TotalAssets_{i,t-1}$ + $TotalAssets_{i,t}$)/2 (García-Teruel et al. (2014)).

of the residuals ($-|\varepsilon_i, t|$) as a measure for accrual quality (AQ).

$$WCA_{i,t} = \Delta CurrentAssets_{i,t} - \Delta Cash_{i,t} - \Delta CurrentLiabilities_{i,t} + \Delta Debt_{i,t} \tag{2}$$

$$CFO_{i,t} = NIBE_{i,t} - TotalAccruals_{i,t} \tag{3}$$

WCA in turn is calculated as the change in current assets, minus the change in cash, minus the change in current liabilities, plus the change in short term bank debt. Whereas CFO is the difference of net income before extraordinary items (NIBE) minus total accruals[3]. We compute total accruals as WCA minus depreciation and amortization expenses (Dep).

$$TotalAccruals_{i,t} = WCA_{i,t} - Dep_{i,t} \tag{4}$$

3.2. Access to bank debt

We use two different measures for a firm's access to bank debt. The variable Bank.Debt is calculated as a firm's amount of total bank debt, both short term and long term, in relation to its total assets (Eq. 5). Next to 'Bank.Debt' we construct a dummy variable 'Bank.Debt.dummy' which equals one when a firm has bank debt (i.e. Bank.Debt > 0) and 0 otherwise (i.e. Bank.Debt $= 0$) .

$$Bank.Debt_{i,t} = TotalBankDebt_{i,t}/TotalAssets_{i,t} \tag{5}$$

$$Bank.Debt.dummy_{i,t} = \begin{cases} 1 & \text{if } Bank.Debt_{i,t} > 0 \\ 0 & \text{otherwise.} \end{cases}$$

3.3. Control Variables

To control for the size classification we construct a categorical variable, Class, indicating the type of format a firm used to file its financial statements corresponding to the classification of the firm as either large, small, or micro (i.e.

[3]In the same manner as Vander Bauwhede et al. (2015) we use bottom-line net income instead of NIBE since the latter is not a component of the Belgian income statement.

Table 1: Control Variables

Controle Variables	Description	Calculation
Class	large, small, micro	Large firms are the reference category.
Altman	Altman score	Altman et al. (2017) model 2.
Size	Firm size	ln(total assets)
Age	Firm age	ln(number of years)
AS	Firm asset structure	tangible assets / total assets
Prof	Firm profitability	EBIT / total assets
Growth	Firm growth potential	intangible assets / total assets
Leverage	Firm leverage	total debt / total assets
Industry	Industry dummy	
Year	Year dummy	

full-, abbreviated-, or micro-format). We select the large firms as the reference category.

To measure firms' financial health we employ the model of Altman et al. (2017)[4], a re-estimation of the model from Altman (1983) using logistic regression analysis, and which is tailored to private firms. Specifically, our financial health score (Altman) is constructed out of four ratios: (X1) retained earnings/total assets, a measure for accumulated profitability; (X2) EBIT/total assets, expressing annual profitability; (X3) working capital/total assets, a measure for liquidity; and (X4) book value of equity/total debt, a measure for solvency. The score was calculated as $1/(1 + e^{-L})$, where $L = 0.035 - 0.862 \times X1 - 1.721 \times X2 - 0.495 \times X3 - 0.017 \times X4$. Note that a higher score should be interpreted as a lower financial health.

We measure size as the natural logarithm of total assets (De Meyere et al. (2018),Van Caneghem & Van Campenhout (2012)). Likewise, age is calculated

[4]We used the coefficients from model 2 from Altman et al. (2017).

as the natural logarithm of the firm's age in years (Van Caneghem & Van Campenhout (2012), García-Teruel et al. (2014)). To control for the potential effects of collateral we add the variable asset structure. It is defined as the quotient of tangible assets on total assets (Van Caneghem & Van Campenhout (2012), García-Teruel et al. (2014)). As collateral serves as a lender's protection against default and taking in account previous literature (Van Caneghem & Van Campenhout (2012), García-Teruel et al. (2014)) we expect a positive relation with bank debt. Profitability is the operating profit divided by total assets (Van Caneghem & Van Campenhout (2012), García-Teruel et al. (2014)). In accordance with the pecking order theory (Myers (1984); Myers & Majluf (1984)) which states that the use of internal funds is preferred above the use of external funds, we expect that profitable firms will rely less on external financing. Therefore we predict a negative relation with bank debt. The firm's growth potential is calculated as intangible assets on total assets (Van Caneghem & Van Campenhout (2012)).

3.4. Model specification

First, to test the association between FRQ and access to debt, we regress the bank debt variable (Bank.Debt) against accrual quality (AQ) and a number of control variables (Eq.6). These control variables are adopted from prior literature which also examined AQ and access to bank debt for private frims (García-Teruel et al. (2014)).

$$\begin{aligned} Dependent_{i,t} = \alpha_0 &+ \beta_1 FRQ_{i,t} + \beta_2 Altman_{i,t} + \beta_3 Profit_{i,t} \\ &+ \beta_4 Age_{i,t} + \beta_5 Size_{i,t} + \beta_6 AS_{i,t} + \beta_7 Growth_{i,t} \\ &+ \beta_8 Lev_{i,t} + \beta_9 Industry_{i,t} + \beta_{10} Year_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{6}$$

To test our second hypothesis we regress the bank debt variable (Bank.Debt) against accrual quality (AQ), a number of control variables, and add the interaction terms AQ∗Class (Eq.7).

$$\begin{aligned} Dependent_{i,t} = \alpha_0 &+ \beta_1 AQ_{i,t} + \beta_2 AQ_{i,t}{*}Class_{i,t} + \beta_3 Altman_{i,t} + \beta_4 Profit_{i,t} \\ &+ \beta_5 Age_{i,t} + \beta_6 Size_{i,t} + \beta_7 AS_{i,t} + \beta_8 Growth_{i,t} \\ &+ \beta_9 Lev_{i,t} + \beta_{10} Industry_{i,t} + \beta_{10} Year_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{7}$$

To test our third hypothesis we regress the bank debt variable (Bank.Debt) against accrual quality (AQ), a number of control variables, and add the interaction terms AQ∗Altman (Eq.8).

$$\begin{aligned} Dependent_{i,t} = \alpha_0 &+ \beta_1 AQ_{i,t} + \beta_2 AQ_{i,t}{}^{*} Altman_{i,t} + \beta_3 Altman_{i,t} \\ &+ \beta_4 Profit_{i,t} + \beta_5 Age_{i,t} + \beta_6 Size_{i,t} + \beta_7 AS_{i,t} + \beta_8 Growth_{i,t} \\ &+ \beta_9 Lev_{i,t} + \beta_{10} Industry_{i,t} + \beta_{10} Year_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{8}$$

In both our models we included the main effect of industry and year as a covariate. Analogous to Van den Bogaerd & Aerts (2015); Ceustermans et al. (2017), our industry classification has five industry dummies based on the two-digit NACE level. To account for heteroskedasticity we report robust standard errors. Both our models are clustered at the firm level to solve for correlation across observations.

3.5. Estimation Procedure

Looking at the summary statistics of our dependent variables (see Table 4), it is evident that a large number of firms have no bank debt. Therefore, as argued by a number of authors (see e.g. Jegers (2011); De Meyere et al. (2018)), examining the level of indebtedness of a firm could be split-up in a two-step process. First, the question whether a firm has any bank debt on its balance sheet. Second, how much bank debt a firm has on its balance sheet. The first question has a dichotomous outcome variable (Bank.Debt.dummy). Correspondingly we employ a probit model, analogous to Jegers (2011); De Meyere et al. (2018). To account for the censored outcome variable (Bank.Debt) we employ a tobit model to examine the amount of bank debt, analogous to De Meyere et al. (2018).

3.6. Belgian Setting

The Belgian research setting was adopted to conduct this archival-empirical study on private firms, to help understand the relation between the accuracy of creditors' risk assessment and access to debt. The use of a Belgian setting is a well-established approach in the accounting literature, specifically with regard to research on private firms (e.g.: De Meyere et al. (2018); Van Caneghem

& Van Campenhout (2012); Vander Bauwhede et al. (2015); Ceustermans & Breesch (2017); Vermoesen et al. (2013)). This setting is particularly useful in studying private firms because Belgium has extensive reporting obligations in place for these type of firms. The financial statements are required to be presented in the prescribed format and, except for personally owned and managed enterprises with unlimited personal liability, all private firms' financial statements have to be filed for publication with The National Bank of Belgium. Hence, there is annual detailed financial information available, which is not common in many other countries (De Meyere et al. (2018)).

In line with the EU's accounting Directive 2013/34/EU, there are three firm size classes distinguished: micro, small, and large. Each class has their own prescribed format with incremental disclosure requirements. These are the micro-, abbreviated-, and full-format respectively. The micro format was introduced in Belgian legislation in 2016. As laid out in Directive 2013/34/EU, the size classification depends on three criteria: balance sheet total, net turnover, and the average number of employees during the financial year. A breakdown of the distribution of size classes in our sample is provided in Table 3. It can be observed that around 95% of our sample consists of small and micro firms, while only 5% of observations come from large firms. This corresponds to the actual size class distribution of the Belgian firm population. More importantly, it further substantiates our argument for the need to incorporate these type of firms (i.e. small and micro firms) in our study and examine the potential differences.

3.7. Data and Sample Breakdown

We obtained financial data between 2010 and 2020 for a large sample of Belgian private firms from a proprietary private database[5] We exclude public firms and firms active in the financial sector due to other reporting requirements.

[5]This extensive data set is collected by Companyweb, a company that is specialised in collecting company information in Belgium. For the purposes of this study, Companyweb granted us confidential access to its data. The received data set contains all financial statement information of all limited liability companies in Belgium.

Table 2: Data Breakdown

Criteria	Drop	Sample
Belgian Private Firms		3,157,616
- Missing Data and independent variables detail demand	587,680	
		2,569,936
- Data on three consecutive years	1,134,207	
Final Sample		1,435,729

Table 3: Class Breakdown

Class	Observations	Percent
Large firms - Full format	78,797	5%
Small firms - Abbreviated format	969,569	68%
Micro firms - Micro format	387,363	27%
Total	1,435,729	100%

After cleaning the data for missing values we ended up with a sample size of 2,569,936 firm-year observations which corresponds to 400,274 private firms. After the cross-sectional regression to compute our FRQ proxy, which requires three consecutive years to compute one firm- and year-specific AQ figure, our final sample size consists of 1,435,729 firm-year observations which corresponds to 311,985 unique firms. The overview of our sample is presented in table 2.

4. Results

4.1. Descriptive Statistics

Table 4 presents descriptive statistics for our dependent and independent variables. Table 5 reports Pearson's correlation coefficients for the variables. For the Altman variable, the coefficients between Profit (-.605) and between Lev (.603) are just above the .600 mark, which is often used to assess potential multicollinearity problems (Luypaert et al., 2016). We address this issue

by running untabulated regressions where we replace Altman with a dummy variable equal to 1 for firms with low financial health (i.e. Altman score above 0.50 cfr. Lukason & Laitinen (2019)). The Pearson's correlation coefficients between the Altman-dummy and both Profit and Lev are much lower (-.430 and .370 respectively). The inclusion of the Altman-dummy instead of the Altman variable measured on a continuous scale does not change the interpretation of our results. Furthermore, we also analyzed the variance inflation factors (VIFs). The maximum VIF (mean VIF) is 2.76 (1.75). Consequently, our results are not affected by multicollinearity problems.

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Table 4: Summary statistics. Variables defined in Table 1. N = 1,435,729.

Variable	Mean	Std. Dev.	1st Quartile	Median	3rd Quartile
Bank.Debt	.16	.22	0	.04	.268
FRQ	-.108	.124	-.133	-.067	-.031
Altman	.457	.167	.362	.446	.516
Profit	.07	.193	.003	.053	.14
Age	2.651	.672	2.197	2.708	3.219
Size	12.822	1.586	11.77	12.774	13.776
AS	.356	.309	.075	.271	.604
Growth	.016	.066	0	0	0
Lev	.714	.93	.342	.613	.846

Table 5: Variables defined in Table 1. Corresponding P-values are reported between brackets.

	Bank.Debt	Class	FRQ	Altman	Profit	Age	Size	AS	Growth	Lev.
Bank.Debt	1									
Class	-0.032	1								
	(0.000)									
FRQ	0.041	-0.034	1							
	(0.000)	(0.000)								
Altman	0.202	0.001	-0.208	1						
	(0.000)	(0.219)	(0.000)							
Profit	-0.079	0.012	0.075	-0.605	1					
	(0.000)	(0.000)	(0.000)	(0.000)						
Age	-0.076	-0.052	0.142	0.029	-0.112	1				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
Size	0.155	-0.197	0.283	-0.197	0.037	0.299	1			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
AS	0.459	0.014	0.139	0.270	-0.140	0.057	0.118	1		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Growth	0.022	-0.005	-0.008	0.074	-0.027	-0.188	-0.040	-0.131	1	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
Lev	0.151	0.000	-0.302	0.603	-0.236	-0.055	-0.237	0.063	0.040	1
	(0.000)	(0.893)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

4.2. Regression results

In Tables 6 and .8 the results of our three main regressions are presented (Eq. 6, 7, and 8) for the dependent variables bank debt and long-term bank debt respectively. Starting with the results of our baseline model (Eq. 6) where we tested the association between FRQ and access to bank debt (see Table 6. We report positive coefficients for AQ in both our probit (0.397,$p < 0.001$) and tobit (0.028,$p < 0.001$) models. These results suggest that higher AQ is associated with not only the increased probability of having bank debt, but also with having a higher level of bank debt. These results are in line with previous studies showing that FRQ lowers the information asymmetries which, in turn, improves the access to debt(Vander Bauwhede et al., 2015; García-Teruel et al., 2014).

Regarding our control variables, the positive coefficients for the Altman vari-

able in both the probit (0.773, $p < 0.001$) and the tobit (0.200, $p < 0.001$) model suggest that healthier firms have a lower level of bank debt. This is opposite to the findings of García-Teruel et al. (2014), where a positive relation between financial health and bank debt is reported. Furthermore, we report positive coefficients for Size, Profit, AS, Growth, and Lev. This indicates that lager firms, firms with higher profit, a higher level of tangible and intangible assets, and a higher level of leverage, are associated with a both a higher probability of having bank debt as with a higher level of bank debt overall. Whereas the negative coefficient for Age indicates that older firms are associated with a lower probability of having bank debt, and , a lower level of bank debt overall.

Moving on the the results of our second model (Eq. 7), it is clear that the inclusion of the interaction term AQ x Class yielded some interesting results. For the reference category, the large firms, we report a positive coefficient for AQ in both the probit (0.754, $p < 0.001$) and tobit model (0.194, $p < 0.001$). Thus, we find that, for the group of firms using the full-format to report their financial statements (i.e. large firms), higher quality financial statements are associated with a higher probability of having bank debt and with having a higher level of bank debt overall.

For the interaction term, we will have another estimate for AQ for the groups of firms that have reduced disclosure requirements (i.e. small and micro firms). Starting with firms classified as small, the parameter estimate for FRQ is now lower for both the probit (0.754 - 0.403 = 0.351) and tobit (0.194 - 0.177 = 0.017) models. These estimates differ significantly from those for the category of large firms (respectively -0.403 and -0.177, $p < .001$). The negative coefficients for the small firms indicates that, compared to large firms (i.e. full format), a higher FRQ is associated with both a lower increase in level of bank debt and a lower increase in the probability of having bank debt, all other variables held constant. For the category of micro firms, the parameter estimates for AQ are even lower in both probit (0.754 - 0.568 = 0.186) and tobit (0.194 - 0.212 = -0.018) models. These estimates also differs significantly from the one for the category of large firms (respectively -0.568 and -0.212, $p < .001$). These results

imply that the greater the disclosure requirements, the greater (more positive) the effect of FRQ on the level bank debt and the probability of having bank debt. Furthermore, it is interesting to notice that the parameter estimate in the tobit model is negative (-0.018) for micro firms. The negative parameter estimates for micro firms indicates that, for companies that provide micro format financial statements, a higher FRQ is associated with less bank debt, all other variables held constant. With respect to the control variables, these are largely in line with those reported in our baseline model (model 6).

Turning now to the results of our third model (Eq. 8) where we included the interaction term FRQ x Altman. In contrast to our baseline model we report a negative coefficient for our AQ proxy in both the probit (-0.243, $p < 0.001$) and tobit (-0.215, $p < 0.001$) models. Furthermore, we find a significant positive parameter estimate for our interaction term AQ x Altman in both probit (-0.243 + 1.231 = 0.988, $p < 0.001$) and tobit (-0.215 + 0.465 = 0.250, $p < 0.001$) models. This implies that the higher the Altman score, the greater (more positive) the effect of FRQ on bank debt and the probability of having bank debt. That is, the lower the financial health of the firm, the greater the positive effect of FRQ on the level of bank debt and the probability of having bank debt.

These findings are in line with Cassar et al. (2015) where they show that higher quality accounting information is more important to banks when the uncertainty of recovering their principal is higher. Furhtermore, we complement the work of Yee (2006) where it is argued that the added value of the quality of earnings in financial reports is contingent on the level of uncertainty.

Table 6: Regression results for the main models (eq. 6, 7, and 8). Probit and tobit models use different dependent variables, Bank.Debt.dummy and Bank.Debt respectively. Dependent variables defined in section 3.2. Control variables defined in Table 1. In order to preserve overview, coefficients for the industry and year variables are not reported. Corresp. significance levels: * p < .05; ** p < .01; *** p < .001

	Prob(Bank Debt)						Bank Debt/TA					
	Probit						Tobit					
	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t
AQ	**0.397**	**0.000**	**0.754**	**0.000**	**-0.243**	**0.000**	**0.028**	**0.000**	**0.194**	**0.000**	**-0.215**	**0.000**
AQ x Small			**-0.403**	**0.000**					**-0.177**	**0.000**		
AQ x Micro			**-0.568**	**0.000**					**-0.212**	**0.000**		
AQ x Altman					**1.231**	**0.000**					**0.465**	**0.000**
Small			0.729	0.000					0.124	0.000		
Micro			0.695	0.000					0.123	0.000		
Altman	0.773	0.000	0.895	0.000	0.896	0.000	0.200	0.000	0.222	0.000	0.244	0.000
Profit	0.473	0.000	0.495	0.000	0.384	0.000	0.105	0.000	0.109	0.000	0.072	0.000
Age	-0.158	0.000	-0.154	0.000	-0.156	0.000	-0.067	0.000	-0.066	0.000	-0.067	0.000
Size	0.189	0.000	0.247	0.000	0.188	0.000	0.048	0.000	0.059	0.000	0.048	0.000
AS	1.145	0.000	1.059	0.000	1.134	0.000	0.459	0.000	0.440	0.000	0.455	0.000
Growth	1.056	0.000	1.042	0.000	1.047	0.000	0.337	0.000	0.332	0.000	0.334	0.000
Lev	0.044	0.000	0.051	0.000	0.059	0.000	0.040	0.000	0.041	0.000	0.046	0.000
Cons.	-2.246	0.000	-3.702	0.000	-2.301	0.000	-0.606	0.000	-0.866	0.000	-0.626	0.000
N	1435729		1435729		1435729		1435729		1435729		1435729	
Wald Chi	49576.69	0.000	54688.5	0.000	49539.420	0.000						
F-test							6091.37	0.000	5315.14	0.000	5803.870	0.000
R-squared	0.109		0.118		0.109		0.303		0.312		0.305	

4.3. Robustness Analysis

This section serves as a check to see if our results remain valid under different assumptions. Specifically, we want to see if our results hold under different measures for bank debt and FRQ. Furthermore, we want to examine if our results our driven by endogeneity, a common concern in these type of studies.

Previous studies evaluating the association between FRQ and bank debt have already described the endogeneity concerns regarding this topic (see e.g. García-Teruel et al. (2010); De Meyere et al. (2018)). These concerns stem from the notion that bank debt might influence FRQ. Through, for example, a monitoring effect of a bank, FRQ might improve under the presence of bank debt. Although these concerns cannot be eliminated entirely in the setting of this study, we propose an additional analysis to counter these concerns. We identify specific firm-year observations where bank debt has been issued to the firm (i.e. an increase in bank debt). While controlling for the level of bank debt before issuance, we can assess the association between FRQ and receiving bank debt. That is, we can examine if higher FRQ is associated with an increased probability of receiving bank debt while at the same time controlling for the level of bank debt the year before issuance. If we then add the interaction term with Class (Altman), we can see how this association changes for the different levels of disclosure requirements (financial health). We construct the dummy variable 'Receive.debt' which is equal to 1 the year before a firm is issued bank debt and 0 otherwise. We run a probit regression similar to our main models (Eq. 6, 7, and 8, while additionally controlling for the level of bank debt.

The results are presented in Table .7 in the appendix. The results of our main analysis, presented in Table 6, hold. This suggests that our results do not seem to be driven by endogeneity. Moreover, the results presented in Table .7 provide some interesting insights. In the baseline model, while controlling for the level of bank debt, we find a negative coefficient for AQ (-0.068, $p < 0.001$). Thus, this suggests that higher AQ is associated with a lower probability of receiving bank debt. Looking at the results of our model where we add the interaction term with Class, we find a positive coefficient for AQ for our reference category

(0.558, $p < 0.001$). Thus, for firms providing the most information detail in their financial statements (i.e. large firms), higher AQ is associated with a higher probability of receiving bank debt, all other variables held constant. For firms using the abbreviated or micro formats ((i.e. small and micro firms), we find the opposite association.

We also examined if our results are robust for different measures of FRQ and bank debt. As a different measure for bank debt we focus on long-term bank bank debt. Compared to short-term bank debt, the access to long-term bank debt is likely to be under heavier scrutiny. Therefore AQ is likely to be more relevant in access to long-term debt. We run the same models as in our main analysis. Our dependent variables are 'LT.Bank.Debt.dummy' and 'LT.Bank.Debt' for our probit and tobit models respectively. LT.Bank.Debt.dummy is a dummy variable equal to one if a firm has long-term bank debt and zero otherwise. LT.Bank.Debt is a variable which scales long-term bank debt by the total assets of the firm. The results are presented in Table .8 and are in line with those presented in our main analysis (Table 6).

Regarding FRQ, we considered an additional measure. For our alternative measure of FRQ, analogous to Bigus & Hillebrand (2017), we constructed a timeliness variable (Delay). The timeliness variable 'Delay' counts the number of days the financial statements have been filed after the legal deadline. Therefore, this is an inverse measure of FRQ. Timeliness is such an interesting measure since it quantifies another dimension of FRQ. Nonetheless it also is an important aspect of quality. The value of the information contained in the financial statements is inversely related with the amount of time it takes to publish them. The results are presented in Table .9 in the appendix.

5. Conclusion

The main goal of the current study was to examine the association between FRQ and the access to bank debt in the context of private firms. More specifically, we aimed to examine how the disclosure requirements, and the financial

health of the firm, influences this association.

With this paper we provided further evidence on the relationship between FRQ and access to bank debt. First, this study has been able to demonstrate that, for all private firms (including the smaller ones), FRQ improves the access to bank debt. Furthermore, we show that the effect of FRQ on the access to bank debt, depends on the disclosure requirements. That is, the value of FRQ, from the perspective of the bank, seems to be dependent on the quantity of information (i.e. type of financial statement format) firms reports in their annual statements. More specifically we find that, when providing the highest level of detail in the financial statements (i.e. full-format), FRQ improves the access to bank debt. For firms small and micro firms, using the abbreviated or the micro-format, FRQ does not seem to improve access to debt as much. This has not previously been described empirically.

Second, we show that the effect of FRQ on access to bank debt is stronger (weaker) for firms with a lower (higher) level of financial health. This implies that creditors will put more weight on the FRQ of their debtors, in their decision to extend credit, when there is more uncertainty regarding their repayment capacity. These findings are in line with Minnis & Sutherland (2017), showing that the tendency for banks to use financial statements in the process to extend credit is related to firms' credit risk.

Finally, in light of the recent changes towards deregulation of financial reporting requirements for smaller firms, these results seem relevant as well. Previous literature has been critical on the decision to relax disclosure requirements for these smaller firms (Kitching et al., 2015). They argue that these reduced requirements might have a perverse effect and harm the firms they intend to help by, for example, restricting their access to bank debt (Kitching et al., 2015). We add to the debate and provide empirical evidence as to how loosening reporting requirements might affect firms in their access to funding.

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Appendices

Table .7: Regression results for the robustness analysis with Receive.Debt as dependent variable. Receive.debt is a dummy variable which is equal to 1 the year before a firm is issued bank debt and 0 otherwise. Variables defined in Table 1. In order to preserve overview, coefficients for the industry and year variables are not reported. Corresp. significance levels: * p < .05; ** p < .01; *** p < .001

	Probit		Probit		Probit	
	prob(Receive.Debt)		prob(Receive.Debt)		prob(Receive.Debt)	
	Coef.	P>t	Coef.	P>t	Coef.	P>t
AQ	**-0.068**	**0.000**	**0.558**	**0.000**	**-0.344**	**0.000**
AQ x Abrv			**-0.640**	**0.000**		
AQ x Micro			**-0.762**	**0.000**		
AQ x Altman					**0.549**	**0.000**
Small			0.046	0.000		
Micro			-0.030	0.005		
Altman	0.498	0.000	0.513	0.000	0.555	0.000
Profit	0.415	0.000	0.416	0.000	0.378	0.000
Age	-0.034	0.000	-0.034	0.000	-0.033	0.000
Size	0.062	0.000	0.067	0.000	0.061	0.000
AS	-0.343	0.000	-0.350	0.000	-0.347	0.000
Growth	-0.264	0.000	-0.264	0.000	-0.268	0.000
Lev	-0.026	0.000	-0.026	0.000	-0.018	0.000
Bank.Debt	0.421	0.000	0.414	0.000	0.418	0.000
Cons.	-1.563	0.000	-1.768	0.000	-1.587	0.000
N	1,130,545		1,130,545		1,130,545	
Wald Chi	14642.83		15082.79	0.000	14735.12	0.000
R-squared	0.018		0.018		0.018	

Table .8: Regression results for the main models (eq. 6, 7, and 8). Probit and tobit models use different dependent variables, LT.Bank.Debt.dummy and LT.Bank.Debt respectively. Dependent variables are long-term versions of variables defined in section 3.2. Control variables defined in Table 1. In order to preserve overview, coefficients for the industry and year variables are not reported. Corresp. significance levels: * p < .05; ** p < .01; *** p < .001

	Prob(LT Bank Debt)						LT Bank Debt/TA					
	Probit						Tobit					
	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t
AQ	**0.504**	**0.000**	**0.994**	**0.000**	**-0.129**	**0.000**	**0.050**	**0.000**	**0.209**	**0.000**	**-0.212**	**0.000**
AQ x Small			**-0.535**	**0.000**					**-0.168**	**0.000**		
AQ x Micro			**-0.724**	**0.000**					**-0.208**	**0.000**		
AQ x Altman					**1.244**	**0.000**					**0.513**	**0.000**
Abrv			0.741	0.000					0.135	0.000		
Micro			0.703	0.000					0.135	0.000		
Altman	0.141	0.000	0.258	0.000	0.257	0.000	-0.043	0.000	-0.021	0.000	0.003	0.601
Profit	0.362	0.000	0.385	0.000	0.275	0.000	0.058	0.000	0.062	0.000	0.022	0.000
Age	-0.207	0.000	-0.203	0.000	-0.205	0.000	-0.081	0.000	-0.080	0.000	-0.080	0.000
Size	0.178	0.000	0.238	0.000	0.177	0.000	0.042	0.000	0.053	0.000	0.042	0.000
AS	1.500	0.000	1.414	0.000	1.490	0.000	0.570	0.000	0.551	0.000	0.566	0.000
Growth	1.332	0.000	1.321	0.000	1.325	0.000	0.450	0.000	0.445	0.000	0.447	0.000
Lev	0.048	0.000	0.056	0.000	0.064	0.000	0.039	0.000	0.040	0.000	0.046	0.000
Cons.	-2.097	0.000	-3.589	0.000	-2.148	0.000	-0.488	0.000	-0.765	0.000	-0.508	0.000
N	1435729		1435729		1435729		1435729		1435729		1435729	
Wald Chi	60441.2	0.000	64483.56	0.000	60537.640	0.000						
F-test							6969.8	0.000	6005.91	0.000	6646.3	0.000
R-squared	0.131		0.142		0.132		0.339		0.348		0.340	

Table .9: Regression results for the main models (eq. 6, 7, and 8). Probit and tobit models use different dependent variables, Bank.Debt.dummy and Bank.Debt respectively. Dependent variables defined in section 3.2. The variable Delay is a variable counting the number of days the financial statements are filed after the legal deadline. All other control variables defined in Table 1. In order to preserve overview, coefficients for the industry and year variables are not reported. Corresp. significance levels: * p < .05; ** p < .01; *** p < .001

	Probit						Tobit					
	prob(Bank Debt)						Bank Debt /TA					
	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t
Delay	**0.001**	**0.000**	**-0.001**	**0.000**	**0.004**	**0**	**0.0002**	**0.000**	**-0.0002**	**0.000**	**0.001**	**0**
Delay x Small			**0.002**	**0.000**					**0.0004**	**0.000**		
Delay x Micro			**0.002**	**0.000**					**0.0005**	**0.000**		
Delay x Altman					**-0.005**	**0**					**-0.001**	**0**
Abrv			0.756	0.000					0.135	0.000		
Micro			0.735	0.000					0.137	0.000		
Altman	0.733	0.000	0.864	0.000	0.824	0	0.196	0.000	0.219	0.000	0.219	0
Profit	0.473	0.000	0.496	0.000	0.468	0	0.106	0.000	0.110	0.000	0.105	0
Age	-0.151	0.000	-0.148	0.000	-0.151	0	-0.067	0.000	-0.066	0.000	-0.067	0
Size	0.194	0.000	0.252	0.000	0.195	0	0.049	0.000	0.059	0.000	0.049	0
AS	1.176	0.000	1.083	0.000	1.173	0	0.461	0.000	0.442	0.000	0.461	0
Growth	1.098	0.000	1.074	0.000	1.096	0	0.340	0.000	0.333	0.000	0.340	0
Lev	0.032	0.000	0.042	0.000	0.033	0	0.039	0.000	0.041	0.000	0.039	0
Cons.	-2.397	0.000	-3.861	0.000	-2.444	0	-0.623	0.000	-0.887	0.000	-0.634	0
N	1435729		1435729		1435729		1435729		1435729		1435729	
Wald Chi	48612.21	0.000	54099.96	0.000	48954.900	0.000						
F-test							6103.15	0.000	5297.38	0.000	5816.25	0.000
R-squared	0.108		0.118		0.109		0.303		0.312		0.304	