FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

Earnings Attributes and the Financing of Privately-Held Businesses

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This dissertation is the ultimate result of some four years of intense doctoral studies. Now that I am somewhat forced to reflect about this period, I have to admit that it is hard to define what or how doctoral studies are like. Metaphorically, I believe my own Ph.D. experience can best be paralleled with hitchhiking in a country you (initially) know very little about. Whereas at the start you have certain expectations about the road ahead, you have to face that starting a Ph.D. track is, like backpacking through an unknown country, somehow a leap in the dark. However, as you go along, you gradually start to develop a better feel of the people in academia, how they work, how they think, how they interact, and how you can have some sort of meaning in the oftentimes overwhelming academic landscape. Similarly to a backpacker, the road will get bumpy at some points and then you may get slightly of track or you may have to tackle some unexpected obstacles. The most vital lesson I was taught during this Ph.D. process is that – no matter how painfully disappointing some failures may be – it is crucially important to learn from your faults, get up again and start over with renewed eagerness. This brings you already one step closer to success. Or to state it in Churchill's words:

"Success is the ability to stumble from failure to failure without loss of enthusiasm"

(Winston Churchill)

At other passages, you book important progress and you reach the one milestone after the other. Evenly important to learning from your faults is to take of few moments to celebrate these interim successes.

As we speak, I am thrilled to be in the final phase of my Ph.D. journey and to have accomplished the goal that was set approximately four years ago. Looking back, my Ph.D. has been a very demanding and challenging but even so a very rewarding and enriching part of my life. More than ever I feel part of the academic community now and I hope my Ph.D. will support me in the rest of my professional (and personal) life.

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I am a person of numbers rather than a person of words, but know that every single of these 448 words is more than meant.

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EXECUTIVE SUMMARY

Unlike for instance US small businesses, European Small and Medium-sized Enterprises (SMEs) generally face rigid reporting requirements. That is to say, European SMEs are obliged by European Directive 2013/34/EU to file a set of financial statements (i.e., a balance sheet, a profit and loss (P&L) account and notes to the financial statements) on an annual basis. Within this directive, European Union (EU) member states can define even more stringent reporting requirements on a country-level. Belgium for instance, has imposed prescribed formats of financial statements together with detailed mandatory charts of accounts.

This dissertation is related to the contemporaneous discussions at the EU level, for instance within the framework of the Small Business Act (SBA), that may trigger a lessening of these reporting requirements for European SMEs. The foremost important argument for scaling down reporting requirements for SMEs is the conviction that the availability of detailed SME financial statements to the general public (including for example banks) may not outweigh the administrative burden and associated costs that SMEs, as preparers of these financial statements, face. In contrast to this more institutional view, a recent stream of empirical academic literature highlights some crucial economic benefits of high-quality financial statements for SMEs. The work in this research stream has for example hypothesized and illustrated that high-quality financial statements improve the access to the two most important sources of external debt financing for SMEs, being bank debt and supplier credit, and accordingly to debt overall. This dissertation further extends this rapidly developing new research stream. Using different research questions, the articles enclosed reveal three novel economic benefits of high Financial Reporting Quality (FRQ) for SMEs seeking external debt. The underlying rationale is that, as opposed to SMEs with higher FRQ, SMEs with

lower FRQ entail more information asymmetry for (potential) creditors and therefore more credit risk.

The first article looks into SMEs' cost of debt and examines whether and to what extent variations in SMEs' FRQ explain variations in the cost at which SMEs can contract financial debt. It is demonstrated that SMEs with more unfavorable FRQ figures exhibit on average higher effective interest costs (both in statistical and economic terms), implying that the risk stemming from more unfavorable FRQ is taken into account by creditors when deciding on the interest rate.

The second article establishes a link between the FRQ of SMEs and larger privately-held firms and these firms' debt maturity structure (i.e., the extent to which the outstanding debts classify as long term debts). The empirical findings indicate that higher FRQ facilitates the acquisition of long term debts in that higher FRQ increases the likelihood of attracting new long term debts and increases the fraction of long term debts in total debts conditional upon having long term debts. This article also provides evidence that the established associations are more pronounced for SMEs than for larger privately-held firms, which is consistent with the view that smaller firms already entail more fundamental risk for creditors and for that reason experience more difficulties in finding long term debts for a similar drop in FRQ.

The third article links SMEs' FRQ with their relative use of financial leasing. Firstly, the empirical findings suggest that, similarly to more plain-vanilla creditors, financial lessors care about SMEs' FRQ given that there exists a significant and positive relationship between SMEs' FRQ and the level of financial leasing on their balance sheets. Secondly, since financial lessors in Belgium hold an absolute right to seize the leased asset in times of lessee default, it is shown that financial leasing constitutes a more important financing alternative (for long term bank loans) for lower-FRQ SMEs.

This dissertation draws attention to the relevance of SME financial statements and their quality for creditors. The empirical findings emphasize that SME financial statement information – if available – is used by creditors. They accordingly signal a clear market demand for (high-quality) SME financial statement information by these creditors.

NEDERLANDSTALIGE SAMENVATTING (DUTCH SUMMARY)

Een vergelijking met bijvoorbeeld Amerikaanse kleine ondernemingen leert dat Europese Kleine en Middelgrote Ondernemingen (KMO's) over het algemeen onderworpen zijn aan strikte rapporteringsvereisten. Onder de Europese regelgeving en in het bijzonder onder richtlijn 2013/34/EU moeten Europese KMO's namelijk jaarrapporten (bestaande uit een balans, een resultatenrekening en toelichtingen) neerleggen. Daarenboven kunnen de Europese lidstaten binnen deze richtlijn nog strengere rapporteringsvereisten opleggen op landenniveau. België heeft dit bijvoorbeeld gedaan met standaardschema's voor de financiële staten en met het Minimum Algemeen Rekeningenstelsel (MAR).

Dit doctoraal proefschrift is verweven met de huidige discussies die gevoerd worden op het Europese niveau en die aanleiding zouden kunnen geven tot een versoepeling van de rapporteringsvereisten voor Europese KMO's. De voornaamste reden om de rapporteringsvereisten voor KMO's in te perken is de overtuiging bij sommige beleidsvoerders dat de publieke beschikbaarheid van gedetailleerde financiële informatie voor KMO's niet opweegt tegen de hiermee gepaard gaande administratieve lasten en kosten voor deze KMO's. In schril contrast met deze meer institutionele kijk heeft er zich in de academische literatuur een strekking van empirisch onderzoek ontwikkeld die een aantal wezenlijke economische voordelen van kwalitatieve financiële rapporten voor KMO's blootlegt. Onderzoekers in deze strekking hebben vooropgesteld en statistisch gestaafd dat financiële rapporteren van hogere kwaliteit een grotere toegang bieden tot de twee belangrijkste bronnen van externe schuldfinanciering voor KMO's zijnde bankschulden en krediet van leveranciers, en als dusdanig tot schuldfinanciering in het algemeen. Dit doctoraal proefschrift oogt bij te dragen aan deze snel groeiende onderzoeksstrekking. Gebruikmakende van

uiteenlopende onderzoeksvragen brengen de studies in dit doctoraal proefschrift drie nieuwe economische voordelen van kwalitatieve financiële rapporten voor KMO's aan het licht. De grondgedachte is steeds dat financiële rapporten van hogere kwaliteit meer dan financiële rapporten van lagere kwaliteit de informatieasymmetrie tussen KMO's en (potentiële) kredietverschaffers verminderen en als dusdanig het kredietrisico van beter rapporterende KMO's reduceren.

De eerste studie focust op de kost van schuldfinanciering voor KMO's en gaat na of de geobserveerde verschillen in de kost waartegen KMO's financiële schulden kunnen aangaan in zekere mate verklaard kunnen worden door verschillen tussen deze KMO's inzake Financiële Rapporteringskwaliteit (FR). De analyses tonen aan dat KMO's met een ongunstigere FR hiervoor gepenaliseerd worden met een significant hogere interestkost. De economische omvang van dit effect suggereert dat kredietverschaffers wel degelijk het nodige belang hechten aan de risico's die voortkomen uit een financiële rapportering van lagere kwaliteit.

De tweede studie legt de link tussen de FR van zowel KMO's als grotere niet-beursgenoteerde ondernemingen met de mate waarin deze ondernemingen gefinancierd zijn met lange termijn schulden. De bevindingen uit deze studie geven aan dat een hogere FR de toegang tot lange termijn schulden bevordert gezien het de kans op het verkrijgen van nieuwe lange termijn schulden verhoogt evenals de proportie die lange termijn schulden uitmaken in de totale schulden. De bevindingen geven verder aan dat deze effecten meer uitgesproken zijn voor KMO's dan voor grotere niet-beursgenoteerde ondernemingen. Dat, in vergelijking met grotere ondernemingen, kleinere ondernemingen bij een gelijkaardige daling in FR meer moeilijkheden ervaren om lange termijn schulden te verwerven kan verantwoord worden door het grotere fundamentele risico dat gepaard gaat met deze kleinere ondernemingen.

De derde studie onderzoekt hoe het gebruik van financiële leasing door een KMO gerelateerd is met diens FR. De positieve associatie voor KMO's tussen FR en het niveau van financiële leasing op de balans illustreert dat financiële leasinggevers net zoals de meer doorsnee kredietverschaffers meer geneigd zijn om krediet te verstrekken aan KMO's met hogere FR. De verdere bevindingen van deze studie verfijnen dit en tonen aan dat – gegeven het absolute karakter van het vindicatierecht dat financiële leasinggevers in België genieten – financiële leasing voornamelijk voor KMO's met lagere scores op de FR-dimensie een belangrijk alternatief voor meer traditionele lange termijn bankschulden vormt.

Dit doctoraal proefschrift vestigt de aandacht op de relevantie voor kredietverschaffers van financial staten van KMO's en de kwaliteit hiervan. De empirische bevindingen benadrukken dat kredietverschaffers de informatie die KMO's verstrekken in hun financiële rapporten wel degelijk gebruiken. Op die manier suggereren ze dat er bij deze kredietverschaffers een duidelijke vraag bestaat naar financiële rapporten (van hoge kwaliteit).

CHAPTER 1:

GENERAL INTRODUCTION

1.1 Positioning

Unlike the reporting requirements in many non-European countries (e.g., US), the European Directive 2013/34/EU (and before the Fourth Directive 78/660/EEC) obliges European Small and Medium-sized Enterprises (*henceforth SMEs*), to publish a set of annual financial statements, i.e., a balance sheet, a profit and loss (P&L) account and notes to the financial statements (European Commission 2016a). A major concern of European policy makers is however whether this reporting duty for SMEs, and accordingly the availability of detailed data on these SMEs, outweighs the costs for SMEs of preparing such financial statements. This concern is consistent with the Small Business Act (SBA), a non-binding document that was communicated by the European Commission in 2008 and aims to 'think small first' in order to support SMEs and entrepreneurs in Europe. That is to say, one of the key elements in the SBA is to cut the administrative burden for SMEs if it is disproportionally large (European Commission 2016b). At the moment of writing, the reporting requirements for SMEs are still an unsettled issue.

Essentially, this debate relates to how valuable end users of SME financial statements gauge the information that is provided in these financial statements. Whilst it is commonly accepted that financial information provided by public firms is relevant for market participants (e.g., Bharath et al. 2008, Francis et al. 2005), relatively little is known about the financial statements prepared by privately-held firms and SMEs (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). Moreover, the usefulness of the information enclosed in those financial statements is still highly contested. On the one hand, it is often argued that for privately-held firms there is less demand from the market for high-quality financial information since private information is communicated on an 'as-needed basis' following an 'insider access' model (Hope et al. 2013, Chen et al. 2011,

Ball and Shivakumar 2005). This is mainly explained by the specific ownership structure of privately-held firms. More precisely, privately-held firms have a more concentrated ownership with lower shareholder turnover rates and a larger degree of managerial ownership. Shareholders of privately-held firms are typically more actively involved in the management of the firm, which reduces their reliance on financial statements and accordingly renders the quality of these financial statements less important (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). On the other hand, given the fact that for privately-held firms, there are fewer competing information sources besides financial statements, there seems to be no reason why other stakeholders (e.g., creditors) would not incorporate this publicly available information in order to take informed decisions. In fact, the findings from some recent studies (García-Teruel et al. 2014a, García-Teruel et al. 2014b, Van Caneghem and Van Campenhout 2012, Chen et al. 2011) suggest that creditors do take financial statements of privately-held firms into account in their decision process.

This dissertation seeks to further feed this debate by examining to what extent the quality of SME financial statements, which is labeled as SMEs' Financial Reporting Quality (*henceforth FRQ*), affects the debt financing behavior of these SMEs and whether high FRQ by SMEs can produce economic benefits for this group of firms. The rationale for the relationship between SMEs' FRQ and their financing with debt is that low FRQ produces information asymmetry and thus risk. Given that SMEs with higher FRQ put their creditors less at risk, it is to be expected that they manage to contract more favorable credit terms and that they suffer less from restricted access to debt.

Practically, this research is important for at least two reasons. Firstly, SMEs often encounter difficulties in getting access to finance. As SMEs are typically more constrained than listed firms in their financing choices (i.e., they do not have access to international capital markets), loans are an important financing source for them. Yet, because SMEs are generally informationally opaque,

information asymmetry problems often hinder SMEs to obtain loans at conditions perceived to be fair. Secondly, despite the fact that SMEs are the backbone of most economies across the globe, the fact that SMEs differ significantly from larger listed firms and the discussions regarding SMEs' financial reporting at the European Union (EU) level, at this point in time there is not that much empirical evidence on the financial statements prepared by SMEs and the consequences of SMEs' FRQ.

1.2 Prior related literature and gaps

Apart from some seminal studies (e.g., Botosan 1997, Sengupta 1998), the empirical research on the consequences of high versus low FRQ (e.g., Bharath et al. 2008, Francis et al. 2005) is a fairly new research stream that took off in the mid-2000s starting mainly with the study by Francis et al. (2004).

The theoretical framework on which these studies commonly rely consists of two basic principles. The first principle is that publicly available accounting information, and by extension FRQ, is fundamental for the efficient allocation of capital (Bhattacharya et al. 2013, Chen et al. 2011). The second principle is that, consistent with the prediction from the analytical models by Easley and O'Hara (2004) and Leuz and Verrecchia (2005), (listed) firms with lower FRQ entail more information risk for investors. To be precise, Easley and O'Hara (2004) demonstrate that the composition of financial information has implications for the cost of equity of listed firms in that a higher proportion of private information (and thus a smaller proportion of publicly available information) raises the price firms pay for external equity. Unlike fully informed investors, uninformed investors cannot use the private information to determine the weights of their portfolios. By consequence, they will always hold too many shares with bad news. Due to this

private information, uninformed investors face thus a non-diversifiable information risk for which they will require a compensating premium, which in turn explains the relatively higher cost of equity for firms with relatively more private information. Francis et al. (2005, p.269) describes the information risk in Easley and O'Hara (2004) as the risk that arises when there is a high likelihood that 'firm-specific information that is pertinent to investor pricing decisions is of low quality'. The model by Leuz and Verrecchia (2005) shows that lower FRQ impairs the coordination between listed firms and (potential) investors and hence results in an information risk that is similar to the one in the Easley and O'Hara (2004) model.

In short, lower FRQ implies that the information that investors use in their decision process is of lower quality, which raises the riskiness of their decisions.

Building on this theoretical framework, empirics have linked the FRQ of firms to different aspects of the financing and investment activities of these firms. For instance, Bhattacharya et al. (2013) show that there is a negative association between the firm's FRQ and the firm's trading costs, Chen et al. (2011), Biddle et al. (2009) and Biddle and Hilary (2006) demonstrate that firms with higher FRQ display higher investment efficiency (Chen et al. 2011, Biddle et al. 2009, Biddle and Hilary 2006) and are less prone to either underinvest or overinvest (Chen et al. 2011, Biddle et al. 2009).

The most developed line in this research stream examines however the relationship between FRQ and corporate financing with a particular focus on the link between firms' FRQ and the price and non-price conditions at which these firms can obtain financing. Consistent with the notion that firms with lower FRQ put their investors more at risk, the studies in this line of research (e.g., Hasan et al. 2012, García-Teruel et al. 2010, Beatty et al. 2010, Bharath et al. 2008, Francis et al. 2005, Francis et al. 2004) document that lower FRQ adversely affects firms' financing actions. Francis et al. (2004) concludes from an analysis with seven different desirable earnings attributes

(i.e., Accruals Quality (*henceforth AQ*), smoothness, predictability, persistence, value relevance, timeliness, and conservatism) that earnings quality (*henceforth EQ*) is a priced risk factor in that listed firms with the least favorable earnings attributes experience a significantly larger cost of equity capital than listed firms with the most favorable earnings attributes. This study also distinguishes between accounting-based attributes and market-based attributes and shows that the largest cost of equity effects are found for the accounting-based attributes (i.e., AQ, smoothness, predictability, and persistence) and for AQ more in particular. In a related study, Francis et al. (2005), it is demonstrated for listed firms that a lower level of AQ not only raises the firm's cost of equity but also its cost of debt in an econometrically and economically significant manner. Other studies that examine the association between AQ and financing variables are García-Teruel et al. (2010) and Bharath et al. (2008). García-Teruel et al. (2010) provide evidence of a positive association between the AQ of Spanish listed firms and these firms' debt maturity structure, implying that listed firms exhibiting lower AQ finance overall with relatively less long term debt. Exploiting a large dataset of bank loans and bonds, Bharath et al. (2008) explore the impact of AQ on the preference for private debt or public debt as well as on the design of debt contracts. Firstly, the results suggest that listed firms with lower AQ tend to favor the private debt market over the public debt market. This is explained by the superior abilities of banks to collect and process information on borrowers. Secondly, Bharath et al. (2008) look into the effects of AQ on three different credit terms (i.e., interest rate, maturity and collateral) and document for their sample of listed firms that for the private debt market, lower AQ adversely affects each of these (i.e., higher interest rate, lower maturity and more collateral requirements). For the public debt market however, listed firms' AQ only has a price effect, which is consistent with banks possessing greater contracting and recontracting flexibility than bondholders. The work by Hasan (2012) examines the relationship between earnings predictability and bank loan contracting. The main finding from

this study is that lower earnings predictability increases the interest rate paid, decreases the loan maturities and increases the debt covenants and collateral requirements for listed firms. As such, this study is in many aspects comparable to Bharath et al. (2008). To end, Beatty et al. (2010) relate the AQ of listed firms to their reliance on operating leases and concludes that firms with lower AQ have a higher propensity to lease their assets instead of buying them.

This dissertation further adds to this particular line of research as it is on the effects of SMEs' FRQ on their debt financing behavior.

Notwithstanding the contributions by for example Hasan et al. (2012), García-Teruel et al. (2010), Bharath et al. (2008), Francis et al. (2005), and Francis et al. (2004), it can be argued that the research on the link between firms' FRQ and their corporate financing still suffers from three important limitations. A first limitation is that, the bulk of the studies in this line of research has been conducted in a US setting with an almost exclusive focus on listed firms (e.g., Hasan et al. 2012, Beatty et al. 2010, Bharath et al. 2008, Francis et al. 2005, Francis et al. 2004). In contrast, mainly due to the limited availability of data, privately-held firms and SMEs have been largely overlooked for a long period of time. Research on the debt financing effects of SMEs' FRQ is nonetheless interesting for a variety of reasons. Firstly, the most important theoretical framework in this line of research, that of information asymmetry, appears to be particularly interesting in the setting of SMEs since these firms typically exhibit higher levels of information asymmetry (Berger and Udell 1998). Secondly, SMEs differ from listed firms in fundamental aspects. For example, SMEs are deemed to be inherently more risky (Van Caneghem and Van Campenhout 2012, Ortiz-Molina and Penas 2008) and the public capital markets are not accessible for SMEs (Van Caneghem and Van Campenhout 2012, Hernández-Cánovas and Martínez-Solano 2007, Scherr and Hulburt 2001). These unique characteristics of SMEs are likely to exert a strong impact on both the

financing options and the financing methods of this group of firms (Van Caneghem and Van Campenhout 2012, Heyman et al. 2008, Ortiz-Molina and Penas 2008). Furthermore, also regarding the information environment, SMEs and listed firms are difficult to compare. In general, SMEs have a far weaker information environment in that, for them, the amount of publicly available information is normally smaller. The reason for this is that, compared to listed firms, the financial statements of SMEs are not as widely distributed and that besides financial statements there are fewer competing sources of information on SMEs as these firms are not monitored by credit rating agencies nor by the financial press (Chen et al. 2011, Ortiz-Molina and Penas 2008, Hernández-Cánovas and Martínez-Solano 2007). As concerns then financial statements, it has also been shown that financial statements of SMEs are of lower quality than the financial statements of listed firms. That is to say, a number of widely cited studies (Hope et al. 2013, Burgstahler et al. 2006, Ball and Shivakumar 2005) have reported that the FRQ of privately-held firms is significantly lower than the FRQ of listed firms. The common explanation is that in privately-held firms the shareholders are more actively involved in the firm, which reduces their reliance on the firm's financial statements. Now given that shareholders are amongst the main users of financial statements, this renders the quality of these financial statements less important. An alternative explanation for the observation that the FRQ of SMEs is lower than the one of listed firms is that SME financial statements are typically more heavily influenced by dividend and tax incentives (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005).

In sum, SMEs and listed firms are fundamentally different both regarding financing and information environment. Therefore – even though it is plausible that some of the arguments in studies on the FRQ of listed firms and the consequences FRQ has for these firms' financing hold in a setting of SMEs – whether the established relations from prior studies on listed firms translate

to a setting of SMEs remains highly uncertain until these relations are explored empirically in an SME setting.

Similarly to other areas in both the accounting and finance literature, also in the research about the effects of firms' FRQ on these firms' financing activities, one has however gradually evolved from an exclusive focus on listed firms to a focus on both listed firms and SMEs. As a result, research on how SMEs' FRQ affects their debt financing has been prospering over the last couple of years with studies by Van Caneghem and Van Campenhout (2012) and later by García-Teruel et al. (2014a, 2014b). The findings from these studies indicate that lower FRQ has negative consequences for the debt financing of SMEs and are as such in line with the evidence provided in earlier listed studies. To be more precise, Van Caneghem and Van Campenhout (2012) and García-Teruel et al. (2014a, 2014b) demonstrate that SMEs with lower AQ have more restricted access to the two most important financing sources for SMEs being bank loans (García-Teruel et al. 2014a) and supplier credit (García-Teruel et al. 2014b) and to debt overall (Van Caneghem and Van Campenhout 2012).

The studies in this dissertation extend this empirical research further by investigating other relevant relationships between SMEs' FRQ and their debt financing.

A second limitation of the research on the effects of FRQ for debt financing is that, thus far, this research has focused on the most conventional types of debt, i.e., bank loans for listed firms and SMEs (García-Teruel et al. 2014a, Hasan et al. 2012, Bharath et al. 2008), bonds for listed firms (Bharath et al. 2008) and supplier credit for SMEs (García-Teruel et al. 2014b). Beatty et al. (2010) constitutes a notable exception on this in that this study examines the impact of FRQ on the usage of operating leases for a sample of listed firms. There are however alternative financing methods that, although they have received little attention, are worthwhile considering. To give an example,

given the fact that SMEs often struggle to meet the collateral requirements of banks, financial leasing is a particularly promising and prospering financing alternative (Belgian Leasing Association 2015, Leaseurope 2015, Deloof et al. 2007), which makes studying the relationship between SMEs' FRQ and their use of financial leasing an interesting research set-up.

A third limitation is the fact that, apparently, no attempts have been undertaken thus far to identify variables that mediate the relationship between firms' FRQ and their financing practices. Given the existing literature an interesting variable in this respect could be fundamental risk. Yee (2006) has for instance developed an analytical model that decomposes the idiosyncratic risk of a listed firm into EQ risk (basically risk stemming from low AQ) and fundamental risk (related to the firm's business model and operating environment). The central prediction from this analytical model is that the effect of EQ risk on a firm's equity risk premium grows in fundamental risk. This was confirmed empirically by Chen et al. (2008). Taking into account that, compared to larger privately-held firms, SMEs face fiercer competition and have operations that are less stable, less predictable and less diversified (Van Caneghem and Van Campenhout 2012, Cole et al. 2013, Heyman et al. 2008, Dechow and Dichev 2002) these firms are expected to entail more fundamental risk. Consistent with the analytical model by Yee (2006) one could therefore expect that EQ effects are more pronounced for SMEs than for larger privately-held firms. In line with this, Bhattacharya et al. (2013) demonstrate that the adverse effects of lower EQ on trading costs are larger for firms with a poorer information environment, such as smaller firms. Alternatively, Hope et al. (2013), Burgstahler et al. (2006) and Ball and Shivakumar (2005) illustrate that the FRQ of listed firms is overall higher than the FRQ of privately-held firms. Given that, apart from other differences, the average listed firm is larger than the average privately-held firm, these findings may indicate a positive association between FRQ and firm size, which implies that the FRQ of smaller firms is

inclined to be lower than the FRQ of larger entities (as in Dechow and Dichev 2002). Consistent with the idea in Chen et al. (2011) that lower FRQ could dilute the FRQ effects, this suggests that the effects of FRQ could be smaller for SMEs than for listed firms. Whether FRQ effects vary with firm size is thus still to be explored.

This dissertation intends to fill these three research gaps.

1.3 Brief overview of the individual articles

The overarching research question and common theme in this dissertation is how useful SME financial statements are for creditors. For that purpose, we focus on SMEs' FRQ and, in every single article, we explore in an alternative way whether higher FRQ yields economic benefits for SMEs. Each time, we also intend to give an indication of the magnitude of these economic benefits. The first article is about the relationship between SMEs' FRQ and their cost of debt. This article is related to the terms at which SMEs are able to contract debt. The second article looks into the effects of FRQ on SMEs' ability to finance with long term debt and also compares these effects for SMEs with the ones for larger privately-held firms. The third article examines the impact of SMEs' FRQ on their usage of an alternative method of financing, being financial leasing. Compared to the first article, the second and third one are more about the SMEs' access to (long term) debt.

The first article examines whether for SMEs, the quality of financial statement information is taken into account by creditors when setting their interest rates. By demonstrating that SMEs with lower quality financial statements have overall a higher cost of debt, this article is one of the first to provide empirical evidence for the importance of financial statement information and the quality thereof in a context of SMEs applying for financing. Furthermore, the established negative

association between SMEs' FRQ and their cost of debt is not only highly statistically significant but its economic impact also turns out to be quite impressive.

The second article links the FRQ of privately-held firms to the maturity structure of their debt and examines in particular whether the level of FRQ affects the relative use of long term debt by privately-held firms. The findings in this article suggest that higher FRQ eases the contracting of long term debt for privately-held firms. To be precise, we find that higher FRQ generally increases the odds of having long term debt for those privately-held firms that do not have long term debt and at the same time generally increases the proportion of long term debt in total debt for privately-held firms that already have long term debt. Additionally, for all privately-held firms, it generally increases the chances of receiving new long term debt. On top of that, we also provide evidence consistent with fundamental risk mediating the relationship between FRQ and long term debt in that we observe some differences between SMEs (that tend to entail more fundamental risk) and larger privately-held firms (that tend entail less fundamental risk).

The third article looks into the association between SMEs' FRQ and the relative use of financial leasing compared to other types of funding. It is first shown that, in general, this association is positive, meaning that better reporting SMEs are able to finance a larger fraction of their assets with financial leasing than worse reporting SMEs. Secondly, it is argued and shown that, in Belgium, SMEs with lower FRQ are inclined to rely to a relatively larger extent on financial leasing and to a relatively smaller extent on long term bank debt. The rationale for this is that in Belgium lessors have a claim on the leased asset that is superior to the claims of any other group of creditors (even to the claims of bankers that secured their debts), which enables them to provide credit in conditions where other creditors may be unwilling to extend (additional) credit or only willing to do so at a very high cost (e.g., conditions with elevated risk caused by low FRQ).

1.4 Measurement of FRQ

1.4.1 The choice for AQ

The most common operationalization of FRQ, i.e., EQ, is borrowed from the accounting literature and expresses the informativeness of reported earnings numbers (e.g., García-Teruel et al. 2014a, Bharath et al. 2008, Francis et al. 2005). Other FRQ operationalizations that have been used in prior related literature (i.e., Van Caneghem and Van Campenhout 2012) are mostly dichotomous proxies related to auditor verification.

Over the years, different EQ measures have however been developed in the accounting literature. Arguably, the most important ones are reviewed in Francis et al. (2004) and Cascino et al. (2010). In these studies, a distinction is made between accounting-based EQ measures (i.e., AQ, smoothness, predictability, and persistence) and market-based EQ measures (i.e., value relevance, timeliness and conservatism). As the firms that are subject to this research do not trade on public markets, only the accounting-based EQ measures are feasible to use in this dissertation.

The work by Francis et al. (2004), suggests that of all (accounting-based and market-based) EQ measures, the effects of EQ are most pronounced if measured as AQ. In particular, by means of a large panel dataset of US listed firms over the period 1975-2001, Francis et al. (2004) show that compared to the other six EQ measures considered, AQ has the largest impact on the cost of equity capital. Ever since this work, most EQ studies have been using AQ, hereby implicitly assuming that AQ is the best measure of the EQ concept. But then again, given the structural differences between privately-held firms and listed firms both concerning their financing and information environment, it remains unclear whether also for privately-held firms AQ is the most important EQ

measure. Although García-Teruel et al. (2014b) use above and beyond AQ also smoothness and predictability to study the relationship between EQ and SMEs' dependence on supplier credit, they do not pursue a comparison of the performance of these EQ measures. On top of that, questions could arise regarding the legitimacy of the implicit assumption in most prior EQ studies that AQ is the preferred EQ measure for it generates the most economically meaningful effects. Apart from the fact that also in EQ studies with privately-held firms AQ is omnipresent and the fact that also in this setting AQ produces the most sizeable economic effects[1], the choice for AQ as EQ measure is in this dissertation predominantly driven by the fact that using AQ to assess the effects of EQ on corporate debt financing has an unambiguous intuitive and practical appeal. That is to say, the most crucial concern for creditors is being reimbursed with interest. Therefore, the firm's predicted future cash flows are of considerable importance to them. Related to this, prior research (Dechow et al. 1998, Dechow 1994) has indicated that compared to current (i.e., realized) cash flows, current (i.e., reported) earnings numbers provide a better starting point for predicting future cash flows, such that earnings become a key information item in credit decisions. This can be explained by the application of accrual accounting. Accruals are the non-cash component of earnings and can be considered as a double-edged sword. On the one hand, they have a unique ability to shift cash flows over time and to produce earnings figures that better reflect the firms' economic reality than the cash flows of the same period. As argued in Dechow et al. (1998) and Dechow (1994), this makes earnings numbers superior to cash flows for predicting future cash flows. On the other hand, estimating accruals involves making a lot of assumptions and estimates. Due to the inherent complexity of this process, estimation errors are inevitable. Furthermore, also managing earnings opportunistically adds noise to the accruals. Eventually, higher AQ means that accruals and

[1] See Appendix 2.4.

earnings are to a larger extent free from error of any kind and hence that there is a better mapping of cash flows in earnings (e.g., Francis et al. 2005, Dechow and Dichev 2002). Likewise, higher-AQ earnings enable creditors to forecast future cash flows and thus the firms' default probability with less uncertainty[2].

Also empirically it can be demonstrated that of all accounting-based EQ measures, AQ is the one that is most closely linked to estimating future cash flows and reimbursement capacity. To that end, we examined the predictability of future cash flows based on earnings conditional on the level of the four accounting-based EQ measures. In particular, in line with García-Teruel et al. (2010) and Bharath et al. (2008), regressions of next year's cash flow from operations on current year's net income and cash flow from operations were run in the first and fifth quintile of each EQ measure in order to compare the predictability of future cash flows between the 20% best firm-years and the 20% worst firm-years for each EQ measure. The outcomes from these regressions are reported in Table 1.1.

[Insert Table 1.1 about here]

For AQ, the model fit is undoubtedly better in the best quintile (being Q5) than in the worst quintile (being Q1) both in terms of model significance (i.e., F-statistic of the model), explanatory power (i.e., R-squared within) and size of the obtained coefficients. This suggests that higher AQ ameliorates the quality of earnings-based forecasts of future cash flows. It accordingly reduces the uncertainty surrounding reimbursement capacity and thus the (information asymmetry) risk

[2] Anecdotal evidence from bankers confirms that banks use earnings numbers to estimate future cash flows and in doing so actually make adjustments to the financial statements for low-quality accruals. This confirms the practical relevance of the AQ concept in a debt context.

creditors face. For smoothness, predictability and persistence this is far less the case. In contrast to expectations, for these EQ measures, the explanatory power of the models is not unoften higher in the worst quintile (i.e., Q1), implying a higher predictability of future cash flows in this quintile. What is more, as the net income variable is insignificant at the 10% level in the best quintile (i.e., Q5)[3], the results suggest that smoother and more predictable earnings are not always of great help for estimating future cash flows.

In the end, higher AQ is used as a signal of higher EQ, higher FRQ and less information asymmetry.

1.4.2 AQ estimations

For measuring AQ, we rely in this dissertation on the model initially developed in a study by Dechow and Dichev (2002)[4], as adjusted by McNichols (2002) in a related study, which is portrayed in regression equation *(1.1)* below. In line with Francis et al. (2005), this is done in two steps.

[3] Statistical significance is in this dissertation always based on two-sided tests, unless stated explicitly otherwise.

[4] To foster practical execution, the Dechow and Dichev (2002) model focuses on working capital accruals, for which it is assumed that cash flow realization falls within the year. This assumption seems very acceptable within our datasets as in more than 95.0% of the cases, the length of the operating cycle (days' accounts receivable + days' inventory) is smaller than 365 days. A potential limitation of the Dechow and Dichev (2002) model is that non-current accruals (where the cash flow realization typically takes longer than a year) are not considered when estimating AQ (Francis et al. 2005). The work of Dechow and Dichev (2002) has however revealed that working capital accruals and total accruals are highly correlated such that focusing on working capital accruals should not be an issue. Since the correlation between non-cash working capital accruals and total accruals reaches 0.950 ($p<0.01$) in our datasets (0.989 in study 1, 0.963 in study 2 and 0.995 in study 3), this is also in our setting a valid argument.

Firstly, regression equation *(1.1)* is estimated in cross-section for each industry[5]-year combination using OLS[6]. i and t index firms and years respectively.

$$\Delta WC_{i,t} = \gamma_0 + \gamma_1 * CFO_{i,t-1} + \gamma_2 * CFO_{i,t} + \gamma_3 * CFO_{i,t+1} + \gamma_4 * \Delta sales_{i,t} + \gamma_5 * PPE_{i,t} + \varepsilon_{i,t} \quad (1.1)$$

Where ΔWC_t[7] is the change in non-cash working capital from year *t-1* to year *t*, CFO_t[8], 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.

[5] Industries are based on the sections of the Nace-BEL industry classification, which is the Belgian application of the European Nace industry classification. The first sections (Agriculture, Fishing and Natural resources) are combined into one as they are related and comprise small numbers of observations.

[6] An alternative to the cross-sectional estimations per industry-year cluster in this dissertation are the industry-specific time-series estimations proposed by Dechow and Dichev (2002). As shown by the high correlations between the resulting AQ figures (0.986 ($p<0.01$) in study 1, 0.991 ($p<0.01$) in study 2 and 0.987 ($p<0.01$) in study 3) both estimation procedures yield a highly comparable measure of AQ. The impact exerted by the applied estimation procedure is thus likely to be neglectable.

[7] In line with prior studies (García-Teruel et al. 2014a, Francis et al. 2005, Francis et al. 2004), $\Delta WC = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD)$, 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, ΔSTD is the change in short term financial debt and the current portion of long term debt. The detail in our data is used to explicitly adjust $(\Delta CA - \Delta Cash)$ for write-offs on inventories, accounts receivables and other current assets (Ooghe et al. 2012).

[8] CFO is measured in line with prior studies (García-Teruel et al. 2014a, Francis et al. 2005, Francis et al. 2004) and taking into account differences in financial statement presentation across countries as bottom line net income minus total accruals. Given the detail in the data, total accruals are not limited to working capital accruals and depreciation, but also include accruals related to, amongst others, write-offs, impairments and provisions (Ooghe et al. 2012).

To curb heteroscedasticity problems (García-Teruel et al. 2010), all variables are scaled by average total assets of year *t* (García-Teruel et al. 2014a). Consistent with prior research (Francis et al. 2005), all variables are winsorized at the 1th and 99th percentiles.

The residual of *(1.1)* 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 or the gross value of property, plant and equipment. The larger the absolute value of the residual, the greater the accrual estimation errors are likely to be (Dechow and Dichev 2002).

For summary statistics on the industry-year estimations of regression equation *(1.1)*, we refer to Appendix 1.1. Amongst other things, the summary statistics in Appendix 1.1 demonstrate accuracy scores exceeding 85.0% and adjusted R-squares exceeding 65.0%.

In a second step, starting from the results of the industry-year regressions above, a company- and year-specific AQ measure is computed as the standard deviation of the residuals in year *t* and the four preceding years[9]. A greater standard deviation is considered to reflect less accurate accrual estimation, more noise and thus lower AQ (Dechow and Dichev 2002). To ease the interpretation of this variable, the AQ measure from the model is multiplied with minus one so that higher AQ numbers imply higher AQ.

[9] 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 may be sound reasons for systematically big residuals (e.g., industry-related factors). In those cases, information risk remains limited.

1.5 Data source

In all articles we apply a regression procedure in which panel data on Belgian firms are employed. These panel data are collected through the Belfirst® DVDs of Bureau Van Dijk, which cover all financial statements filed by firms in Belgium and Luxembourg. For the first article, we exploit a dataset of 8,908 full format financial statements of 2,692 Belgian SMEs over the period 2003-2009. The dataset of the second article extends the one of the first article in two basic ways. Firstly, the dataset is updated and the years 2010, 2011, 2012, 2013 and 2014 are added. Secondly, the second article also considers larger privately-held firms (i.e., non-SMEs). This results in a dataset consisting of 35,017 firm-year observations for 7,326 Belgian privately-held firms over the 2004-2014 time horizon. As in the first article, the third article focuses exclusively on full format financial statements of SMEs. The dataset used in this article counts 18,538 firm-years from 4,290 Belgian SMEs, again over the years 2004 until 2014.

Belgium constitutes a promising research setting for conducting this research. The main reason for this is that, compared to other countries (e.g., US), Belgian privately-held firms face rigid reporting requirements. More specifically, all limited liability firms in Belgium (even small SMEs) are obliged by Belgian company law to file annual financial statements with the National Bank, which then makes these financial statements public. On top of that, Belgian regulators have imposed prescribed formats of financial statements and detailed mandatory charts of accounts that have to be obeyed. We benefit from these regulations in that they secure that for Belgian privately-held firms yearly, detailed and uniform financial statements are easily accessible, which is for many other countries not the case.

Another interesting feature of definitely two of our three datasets is that they cover the recent financial crisis that we had, which allows us to explore the effects of the crisis on the financing of SMEs.

1.6 Structure of the dissertation

The second chapter of this dissertation is on the first article and the relationship between SME's FRQ and their cost of debt. The third and fourth chapter present the second and third article. The second and third article are about the relationships between SMEs' FRQ and their use of long term debt and financial leasing respectively. The fifth and final chapter concludes this dissertation and provides the major findings and contributions together with some practical implications, limitations and avenues for future research.

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Table 1.1

Table 1.1: Predictability of future cash flows conditional on the level of the four accounting-based EQ measures

$$CFO_{i,t+1} = a_0 + a_1 * Net\ income_{i,t} + a_2 * CFO_{i,t} + \eta_i + \varepsilon_{i,t}$$

Study 1

	Panel A1: AQ			**Panel B1**: Smoothness			**Panel C1**: Predictability			**Panel D1**: Persistence		
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q5 (BEST)	$\hat{a}_0$	0.094***	(0.000)	$\hat{a}_0$	0.111***	(0.000)	$\hat{a}_0$	0.083***	(0.000)	$\hat{a}_0$	0.146***	(0.000)
	$\hat{a}_1$	0.740***	(0.000)	$\hat{a}_1$	-0.185	(0.724)	$\hat{a}_1$	0.519	(0.365)	$\hat{a}_1$	0.380***	(0.000)
	$\hat{a}_2$	-0.508***	(0.000)	$\hat{a}_2$	-0.365***	(0.000)	$\hat{a}_2$	-0.443***	(0.000)	$\hat{a}_2$	-0.437***	(0.000)
	F-stat	176.1***	(0.000)	F-stat	36.8***	(0.000)	F-stat	29.1***	(0.000)	F-stat	110.2***	(0.000)
	N	2,788		N	2,788		N	2,788		N	2,787	
	R^2 within	0.172		R^2 within	0.045		R^2 within	0.030		R^2 within	0.122	
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q1 (WORST)	$\hat{a}_0$	0.134***	(0.000)	$\hat{a}_0$	0.119***	(0.000)	$\hat{a}_0$	0.131***	(0.000)	$\hat{a}_0$	0.120***	(0.000)
	$\hat{a}_1$	0.171***	(0.000)	$\hat{a}_1$	0.160***	(0.000)	$\hat{a}_1$	0.241***	(0.000)	$\hat{a}_1$	0.121***	(0.000)
	$\hat{a}_2$	-0.323***	(0.000)	$\hat{a}_2$	-0.263***	(0.000)	$\hat{a}_2$	-0.354***	(0.000)	$\hat{a}_2$	-0.392***	(0.000)
	F-stat	90.7***	(0.000)	F-stat	32.8***	(0.000)	F-stat	119.7***	(0.000)	F-stat	135.8***	(0.000)
	N	2,787		N	2,787		N	2,787		N	2,788	
	R^2 within	0.107		R^2 within	0.043		R^2 within	0.121		R^2 within	0.149	

Table 1.1: Predictability of future cash flows conditional on the level of the four accounting-based EQ measures (cont'd)

$$CFO_{i,t+1} = a_0 + a_1 * Net\ income_{i,t} + a_2 * CFO_{i,t} + \eta_i + \varepsilon_{i,t}$$

Study 2

	Panel A2: AQ			**Panel B2**: Smoothness			**Panel C2**: Predictability			**Panel D2**: Persistence		
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q5 (BEST)	$\hat{a}_0$	0.096***	(0.000)	$\hat{a}_0$	0.093***	(0.000)	$\hat{a}_0$	0.091***	(0.000)	$\hat{a}_0$	0.117***	(0.000)
	$\hat{a}_1$	0.502***	(0.000)	$\hat{a}_1$	0.057	(0.636)	$\hat{a}_1$	0.138	(0.190)	$\hat{a}_1$	0.298***	(0.000)
	$\hat{a}_2$	-0.440***	(0.000)	$\hat{a}_2$	-0.283***	(0.000)	$\hat{a}_2$	-0.361***	(0.000)	$\hat{a}_2$	-0.319***	(0.000)
	F-stat	381.4***	(0.000)	F-stat	280.9***	(0.000)	F-stat	330.6***	(0.000)	F-stat	218.4***	(0.000)
	N	7,440		N	7,440		N	7,440		N	7,439	
	R^2 within	0.142		R^2 within	0.110		R^2 within	0.111		R^2 within	0.083	
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q1 (WORST)	$\hat{a}_0$	0.109***	(0.000)	$\hat{a}_0$	0.096***	(0.000)	$\hat{a}_0$	0.103***	(0.000)	$\hat{a}_0$	0.101***	(0.000)
	$\hat{a}_1$	0.181***	(0.000)	$\hat{a}_1$	0.225***	(0.000)	$\hat{a}_1$	0.252***	(0.000)	$\hat{a}_1$	0.247***	(0.000)
	$\hat{a}_2$	-0.275***	(0.000)	$\hat{a}_2$	-0.317***	(0.000)	$\hat{a}_2$	-0.310***	(0.000)	$\hat{a}_2$	-0.333***	(0.000)
	F-stat	202.8***	(0.000)	F-stat	138.1***	(0.000)	F-stat	287.2***	(0.000)	F-stat	283.3***	(0.000)
	N	7,439		N	7,439		N	7,439		N	7,440	
	R^2 within	0.081		R^2 within	0.058		R^2 within	0.099		R^2 within	0.108	

Table 1.1: Predictability of future cash flows conditional on the level of the four accounting-based EQ measures (cont'd)

$$CFO_{i,t+1} = a_0 + a_1 * Net\ income_{i,t} + a_2 * CFO_{i,t} + \eta_i + \varepsilon_{i,t}$$

Study 3

	Panel A3: AQ			**Panel B3**: Smoothness			**Panel C3**: Predictability			**Panel D3**: Persistence		
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q5 (BEST)	$\hat{a}_0$	0.092***	(0.000)	$\hat{a}_0$	0.096***	(0.000)	$\hat{a}_0$	0.090***	(0.000)	$\hat{a}_0$	0.119***	(0.000)
	$\hat{a}_1$	0.753***	(0.000)	$\hat{a}_1$	0.205	(0.259)	$\hat{a}_1$	0.211	(0.186)	$\hat{a}_1$	0.392***	(0.000)
	$\hat{a}_2$	-0.484***	(0.000)	$\hat{a}_2$	-0.316***	(0.000)	$\hat{a}_2$	-0.373***	(0.000)	$\hat{a}_2$	-0.331***	(0.000)
	F-stat	241.3***	(0.000)	F-stat	159.2***	(0.000)	F-stat	168.8***	(0.000)	F-stat	122.1***	(0.000)
	N	3,716		N	3,716		N	3,716		N	3,716	
	R^2 within	0.175		R^2 within	0.125		R^2 within	0.114		R^2 within	0.093	
		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)		COEF	(p-value)
Q1 (WORST)	$\hat{a}_0$	0.124***	(0.000)	$\hat{a}_0$	0.105***	(0.000)	$\hat{a}_0$	0.119***	(0.000)	$\hat{a}_0$	0.115***	(0.000)
	$\hat{a}_1$	0.164***	(0.000)	$\hat{a}_1$	0.162***	(0.000)	$\hat{a}_1$	0.219***	(0.000)	$\hat{a}_1$	0.173***	(0.000)
	$\hat{a}_2$	-0.302***	(0.000)	$\hat{a}_2$	-0.307***	(0.000)	$\hat{a}_2$	-0.339***	(0.000)	$\hat{a}_2$	-0.364***	(0.000)
	F-stat	115.1***	(0.000)	F-stat	66.6***	(0.000)	F-stat	160.5***	(0.000)	F-stat	171.5***	(0.000)
	N	3,716		N	3,716		N	3,716		N	3,716	
	R^2 within	0.093		R^2 within	0.058		R^2 within	0.111		R^2 within	0.130	

Coefficients from firm fixed effects regressions. *CFO* = (Bottom line net income - Total accruals) / Avg. TA. *Net income* = Net income after tax / Avg. TA. *AQ*: see section 1.4.2 for exact definition, *Smoothness*, *Predictability*, and *Persistence* are EQ measures as defined in Francis et al. (2004). ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendix 1.1

Appendix 1.1: Summary statistics AQ estimations

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

Panel A: STUDY 1 (SMES)						
	EXP SIGN	MEAN	STDEV	p10	MEDIAN	p90
$\hat{\gamma}_0$	?	0.036	0.025	0.017	0.038	0.058
(p-value)		(0.099)	(0.216)	(0.000)	(0.000)	(0.507)
$\hat{\gamma}_1$	+	0.185	0.082	0.104	0.173	0.301
(p-value)		(0.032)	(0.111)	(0.000)	(0.000)	(0.073)
Accuracy		92.2%				
$\hat{\gamma}_2$	-	-0.718	0.088	-0.810	-0.718	-0.639
(p-value)		(0.000)	(0.002)	(0.000)	(0.000)	(0.000)
Accuracy		100.0%				
$\hat{\gamma}_3$	+	0.153	0.064	0.094	0.148	0.218
(p-value)		(0.059)	(0.187)	(0.000)	(0.000)	(0.201)
Accuracy		88.3%				
$\hat{\gamma}_4$	?	0.044	0.053	-0.007	0.039	0.092
(p-value)		(0.086)	(0.198)	(0.000)	(0.001)	(0.398)
$\hat{\gamma}_5$	?	0.015	0.022	-0.016	0.015	0.045
(p-value)		(0.198)	(0.284)	(0.000)	(0.040)	(0.722)
N		586.221	523.767	39	435	1,413
N_{years}		11 (1999-2009)				
$N_{industries}$		7				
$N_{regressions}$		77				
$N_{total\ firm\text{-}years}$		45,139				
R^2-adj		0.690	0.102	0.594	0.683	0.821

Appendix 1.1: Summary statistics AQ estimations (cont'd)

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

Panel B: STUDY 2 (PRIVATE FIRMS)						
	EXP SIGN	MEAN	STDEV	p10	MEDIAN	p90
$\hat{\gamma}_0$	?	0.036	0.016	0.025	0.037	0.053
(p-value)		(0.067)	(0.195)	(0.000)	(0.000)	(0.284)
$\hat{\gamma}_1$	+	0.160	0.061	0.100	0.154	0.224
(p-value)		(0.023)	(0.091)	(0.000)	(0.000)	(0.040)
Accuracy		94.3%				
$\hat{\gamma}_2$	-	-0.721	0.072	-0.792	-0.724	-0.651
(p-value)		(0.001)	(0.008)	(0.000)	(0.000)	(0.000)
Accuracy		100.0%				
$\hat{\gamma}_3$	+	0.163	0.062	0.105	0.155	0.237
(p-value)		(0.019)	(0.091)	(0.000)	(0.000)	(0.037)
Accuracy		97.1%				
$\hat{\gamma}_4$	?	0.042	0.048	0.013	0.038	0.092
(p-value)		(0.067)	(0.170)	(0.000)	(0.000)	(0.304)
$\hat{\gamma}_5$	?	0.016	0.016	0.001	0.016	0.037
(p-value)		(0.154)	(0.271)	(0.000)	(0.011)	(0.583)
N		971.019	882.256	52	732	2,179
N_{years}		15 (1999-2013)				
$N_{industries}$		7				
$N_{regressions}$		105				
$N_{total\ firm\text{-}years}$		101,957				
R^2-adj		0.680	0.101	0.582	0.678	0.816

Appendix 1.1: Summary statistics AQ estimations (cont'd)

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

Panel C: STUDY 3 (SMES)

	EXP SIGN	MEAN	STDEV	p10	MEDIAN	p90
$\hat{\gamma}_0$	?	0.037	0.027	0.015	0.037	0.058
(p-value)		(0.113)	(0.237)	(0.000)	(0.000)	(0.501)
$\hat{\gamma}_1$	+	0.181	0.090	0.093	0.171	0.229
(p-value)		(0.052)	(0.148)	(0.000)	(0.000)	(0.181)
Accuracy		87.6%				
$\hat{\gamma}_2$	-	-0.723	0.095	-0.790	-0.721	-0.665
(p-value)		(0.004)	(0.025)	(0.000)	(0.000)	(0.000)
Accuracy		99.0%				
$\hat{\gamma}_3$	+	0.180	0.099	0.082	0.176	0.246
(p-value)		(0.065)	(0.188)	(0.000)	(0.000)	(0.173)
Accuracy		88.6%				
$\hat{\gamma}_4$	?	0.049	0.062	0.009	0.043	0.099
(p-value)		(0.104)	(0.214)	(0.000)	(0.001)	(0.317)
$\hat{\gamma}_5$	?	0.013	0.022	-0.008	0.014	0.037
(p-value)		(0.229)	(0.261)	(0.000)	(0.160)	(0.690)
N		526.429	521.936	31	418	1,240
N_{years}		15 (1999-2013)				
$N_{industries}$		7				
$N_{regressions}$		105				
$N_{total\ firm\text{-}years}$		55,275				
R^2-adj		0.682	0.118	0.588	0.681	0.816

$\Delta WC = \big((\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD)\big) / Avg.TA$, where ΔCA = Change in current assets, $\Delta Cash$ = Change in cash and cash equivalents, ΔCL = Change in current liabilities, ΔSTD = Change in short term financial debt and the current portion of long term debt. CFO = (Bottom line net income - Total accruals) / Avg. TA. $\Delta sales$ = Change in net sales / Avg. TA, PPE = Gross value of property, plant and equipment / Avg. TA. Expected signs are based on Dechow and Dichev (2002). Accuracy indicates in how many cases the expected sign is found at the 10% significance level. p-values are reported between brackets.

CHAPTER 2:

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 SMEs over the 1997-2010 period. Using AQ 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 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 FRQ - Cost of debt - SMEs - Information asymmetry

JEL Classifications G21 - G32 - M41

2.1 Introduction

In order to inform their stakeholders, European SMEs have to publish a set of annual financial statements (i.e., a balance sheet, a P&L 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 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 AQ, an EQ metric borrowed from the accounting literature (Bharath et al. 2008, Francis et al. 2005, Francis et al. 2004, 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 from 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 2.2 develops our hypothesis. Section 2.3 discusses our research design. Section 2.4 describes the sampling procedure.

Section 2.5 provides some descriptive statistics, discusses the selected econometric method and elaborates on the main results. Section 2.6 concludes.

2.2 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) cash flows, better measure firm performance, more closely reflect expected cash flows, and better predict future 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 earnings-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 EQ 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 EQ 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). Firm-bank ties (de Bodt et al. 2005, Degryse and Van Cayseele 2000) and collateral (Degryse et al. 2012, Steijvers et al. 2010) are for instance highly important in lending to small firms, and, bonds of trust between the small firm and its banker(s) and heavy collateral pledges may act as confounding factors in the relationship between SMEs' FRQ and SMEs' cost of debt. Within this relationship lending framework (e.g., Rajan 1992, Sharpe 1990) it is even not unthinkable that SMEs with relatively high FRQ figures are nonetheless charged relatively high rates since these SMEs are esteemed to be able to turn to competing banks more easily. Therefore, prior results need not to hold in an SME context, an important segment of the European economy. Whether bankers price the quality of SMEs' earnings remains thus an empirical question. In the end, this discussion leads to the following hypothesis (in alternative format):

H: Ceteris paribus, there is a negative association between SMEs' EQ and the cost of SMEs' debt financing

2.3 Research design

To test whether the quality of SMEs' earnings is related to the cost of debt financing, we estimate regression equation *(2.1)* below.

$$Cost\ of\ debt_{i,t+1} = \beta_0 + \beta_1 * AQ_{i,t} + \beta_2 * Size_{i,t} + \beta_3 * CF\ performance_{i,t} + \beta_4 * Age_{i,t} + \beta_5 * Leverage_{i,t} + \beta_6 * Interest\ coverage_{i,t} + \beta_7 * Asset\ tangibility_{i,t} + \beta_8 * Negative\ equity_{i,t} + \beta_9 * Growth_{i,t} + \beta_{10} * Maturity_{i,t} + \beta_{11} * Secured\ status_{i,t} + \beta_{12} * \boldsymbol{X_{i,t}} + \varepsilon_{i,t} \quad (2.1)$$

Where i and t index firms and years respectively. The definitions of the variables in regression equation *(2.1)* can be found in Table 2.1.

[Insert Table 2.1 about here]

In line with prior studies (Minnis 2011, Francis et al. 2005), the $Cost\ of\ debt$ is computed using data from the financial statements as the one-year-ahead interest expense[10] divided by the average amount of financial debt over year *t+1*, i.e., the one-year-ahead effective interest cost. The one-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.

The test variable, i.e., AQ, is estimated using the model by Dechow and Dichev (2002) as adjusted by McNichols (2002). For the underlying computations we refer to section 1.4.2.

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-

[10] 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.

Cánovas and Martínez-Solano 2010)[11]. 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. Firstly, 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 may 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[12] and $CF\ performance$ as the cash flow from operations over total assets.

Secondly, 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.

Thirdly, 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

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

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

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.

Fourthly, as higher values for interest coverage and asset tangibility indicate less financial risk, a negative coefficient on these variables is expected. $Interest\ coverage$[13] 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.

Fifthly, 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 pledges. 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

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

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 one 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[14]. 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[15] is included to control for industry effects. The largest industry, retailing, serves as the base category.

To mitigate the impact of outliers, all continuous independent variables except for age[16] are winsorized at the 1th and 99th percentiles[17].

[14] Defining secured status as the percentage of debt that is secured by the company or the government delivers results that are qualitatively similar to the results with the binary specification of secured status (not reported).

[15] In line with the AQ estimations in section 1.4.2, 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 2.3 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).

In an unreported test, more fine-grained industry dummies were constructed based on 40 two-digit industry groups. This did not modify the general tenor of the results (not reported).

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

[17] 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.

2.4 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[18], 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[19] 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[20]. Observations without balance sheet data (Dechow and Dichev 2002) or with inconsistencies within the financial statements[21] were deleted.

[18] 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).

[19] 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. Firstly, 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.

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

[21] 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.

Since the focus of this study is on SMEs, only firm-year observations from SMEs are withheld. As we use data from a EU 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 twelve 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[22]. Up to this point, the dataset counts 69,571 firm-year observations.

The computation of AQ entails severe data demands (see section 1.4.2), 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[23]. As the dataset for this study is limited

[22] 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.

[23] 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.

to 14 years (1997-2010), a company-specific AQ can only be determined for firm-year observations within the 2003-2009 period. This 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 8,908 firm-year observations from 2,692 Belgian SMEs over the period 2003-2009. The sample selection procedure is summarized in Table 2.2.

[Insert Table 2.2 about here]

2.5 Empirical results

2.5.1 Descriptive statistics

Table 2.3 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 micro enterprises, 4,769 firm-year observations from small enterprises and 3,696 observations from medium-sized enterprises (not reported). To end, the financial statements were audited in 72.0% of the cases (not reported).

[Insert Table 2.3 about here]

Table 2.4 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 2.4 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 American listed companies. The mean and median absolute values of the AQ measure reported in prior work on American listed companies (Francis et al. 2005, Francis et al. 2004, 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[24]. 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 from Leuz et al. (2003) that AQ tends to be better in Anglo-Saxon countries, and with the finding from Burgstahler et al. (2006) and Ball and Shivakumar (2005) that unlisted companies typically have a lower EQ.

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

[24] It has to be noted here that Francis et al. (2004) and Dechow and Dichev (2002) do not use the McNichols (2002) extensions.

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.

[Insert Table 2.4 about here]

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 2.5 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.

[Insert Table 2.5 about here]

The correlation matrix provided in Table 2.6 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.

[Insert Table 2.6 about here]

2.5.2 Regression results

To take into account the stability of the test variable over time, Fama and MacBeth (1973) regressions are preferred[25].

[25] 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 =6,093). 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, 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.

Table 2.7 depicts our regression results[26]. The third column (i.e., Panel A) reports the results of estimating a model where only the control variables from regression equation *(2.1)* are included (basic model). In the fourth column (i.e., Panel B), the basic model is extended with AQ (full model). Both specifications include industry dummies.

[Insert Table 2.7 about here]

In order to judge the relevance of the control variables, we considered the interpercentile range between the 10^{th} and 90^{th} percentile (see last column Table 2.4) 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 may be economies of scale in lending. In an unreported test we find supporting evidence for the idea that larger companies are more levered, 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 loan maturities and (more) collateral are, besides higher interest rates, alternative answers to information asymmetry problems, they allow for lower interest rates.

[26] 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 of those estimations (not reported) are similar to the ones reported in Table 2.7.

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 2.7 shows that in both models, compared to retailing, the manufacturing industry has a significantly ($p<0.01$) lower cost of debt[27]. Service companies and hotels and restaurants tend to have a somewhat higher cost of debt than retailers, while the construction sector has a marginally 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 2.7 indicate that the coefficient

[27] 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.

on AQ is highly statistically significant at the 1% level[28] and that adding AQ slightly raises the explanatory power of the model in terms of R-squared. This highlights the fact that AQ (i.e., our measure of 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, it is 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[29].

[28] Also with bootstrapped standard errors (500 random samples with replacement and clustering at the firm), the AQ effect continues to be significant at the 1% level (not reported).

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

2.5.3 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 5^{th} percentile and the 95^{th} percentile, while simultaneously truncating all continuous independent variables except for age at the 1^{th} and the 99^{th} percentiles, the results for the test variable in regression equation *(2.1)* are statistically similar to those in Table 2.7 (see Appendix 2.1, Panel A), although the size of the AQ effect is smaller (not reported).

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 equation *(2.1)* is estimated using a sub-sample excluding firm-year observations from the retailing and manufacturing industries. The estimation results show that the result on the test variable holds (see Appendix 2.1, Panel B). 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 measure of FRQ, the regressions in Table 2.7 were repeated with the absolute residuals from estimating regression equation *(1.1)* in section 1.4.2. 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 2.7 (see Appendix 2.2, Panels A and B).

In a second test, the procedure described in Beuselinck and Manigart (2007) was followed to verify whether SMEs with a higher AQ reported losses in a more timely manner. To this end, regression equation *(2.2)*, where i indexes firms and t indexes years, was estimated.

$$\Delta NI_{i,t} = \tau_0 + \tau_1 * NEG(\Delta NI)_{i,t-1} + \tau_2 * \Delta NI_{i,t-1} + \tau_3 * NEG(\Delta NI)_{i,t-1} * \Delta NI_{i,t-1} + \tau_4 * Above\ median\ AQ_i + \tau_5 * Above\ median\ AQ_i * NEG(\Delta NI)_{i,t-1} + \tau_6 * Above\ median\ AQ_i * \Delta NI_{i,t-1} + \tau_7 * Above\ median\ AQ_i * NEG(\Delta NI)_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t} \quad (2.2)$$

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 and income after tax as well as when contrasting the 20% observations with the best AQ with the 20% observations with worst AQ (see Appendix 2.3). This justifies our choice for AQ as measure of 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 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 net income and cash flow from operations as the independent variables. As shown in Table 1.1, Panel A1, the fit is way better in the highest AQ quintile (i.e., best AQ), compared to the lowest AQ quintile (i.e., worst AQ). Therefore, we can conclude from this analysis that the predictability of future cash flows rises as the AQ rises. This confirms that SMEs with higher values of AQ have more informative earnings.

In a fourth test, we have computed smoothness, predictability, and persistence, i.e., the three alternative accounting-based EQ measures from Francis et al. (2004), and consistent with Francis et al. (2004), for each of these measures we have estimated their impact on the cost of debt of the sampled SMEs. The results of these analyses are reported in Appendix 2.4. Regarding statistical significance, AQ (Panel A) and predictability (Panel C) are the most relevant EQ measures in that they turn out to be significant at the 1% level. In contrast, the cost of debt effects of persistence (Panel D) are only significant at the 10% level in a one-sided test and those of smoothness (Panel B) are not significantly different from zero at all at the conventional significance levels. As expected, AQ, predictability and persistence obtain a negative sign implying that relatively to worse reporting SMEs, better reporting SMEs manage to contract debt at interest rates that are on average lower. To compare the economic significance of the clearly significant EQ measures, being AQ and predictability, we determine the reduction in the cost of debt associated with an amelioration in EQ from the 10^{th} to the 90^{th} EQ percentile if EQ is measured as AQ (i.e., a 194.4 basis points reduction) and the cost of debt reduction for an equivalent improvement in predictability (i.e., a 76.2 basis points reduction). Hence, consistent with Francis et al. (2004), the EQ effect appears to be larger when EQ is measured as AQ than when measured as predictability. Incorporating all four EQ measures in

one model (Panel E) confirms the previous results since only AQ is statistically significant and since its economic impact has not decreased. Based on these findings, AQ is our preferred EQ measure.

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 equations *(2.3)* and *(2.4)*. 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 = 6,124). It is also important to note that the computations below only yield an approximate measure of the cost of new debt.

$$New\ debt_{i,t+1} = Debt_{i,t+1} - Debt > 1\ year_{i,t} \qquad (2.3)$$

$$Cost\ of\ debt_{i,t+1} = (Debt > 1\ year_{i,t} \,/\, Debt_{i,t+1}) * Cost\ of\ debt_{i,t} + (New\ debt_{i,t+1} \,/\, Debt_{i,t+1}) * Cost\ of\ new\ debt_{i,t+1} \qquad (2.4a)$$

$$\Leftrightarrow Cost\ of\ new\ debt_{i,t+1} = ((Debt > 1\ year_{i,t} \,/\, Debt_{i,t+1}) * Cost\ of\ debt_{i,t} - Cost\ of\ debt_{i,t+1}) * (-(Debt_{i,t+1} \,/\, New\ debt_{i,t+1})) \qquad (2.4b)$$

We encounter a mean cost of new debt of 8.6% (not reported). 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 (not reported, $p<0.01$). 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 (see Appendix 2.5, Panel A). 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 (not reported).

As a final robustness test, we restricted the sample to the audited firms. The results of Table 2.7 were confirmed (see Appendix 2.5, Panel B). As such, this work shows that our measure is able to further differentiate within the group of audited firms.

2.6 Conclusion

Exploring a large longitudinal dataset on Belgian SMEs, this paper provides evidence that poorer FRQ, as proxied by lower AQ, is associated with a higher effective interest cost, even in a context that may 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 10^{th} AQ percentile is on average 194.9 basis points higher than the effective interest cost of an SME at the 90^{th} 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 may 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 eight 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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Tables

Table 2.1: Variable definitions

DEPENDENT VARIABLE	DEFINITION
Cost of debt	Interest expense *t+1* / average debt *t+1*
TEST VARIABLE	**DEFINITION**
AQ	See section 1.4.2 for exact definition
CONTROL VARIABLES	**DEFINITIONS**
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 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

Table 2.2: Sampled firm-year observations (2003-2009)

CRITERIA	DROP	SAMPLE
Initial sample		102,374
- restructuring activities	-25,991	
		76,383
- fiscal motives	-5,698	
		70,685
- short or long fiscal year	-1,114	
		69,571
- no non-missing data over eight consecutive years for AQ	-55,632	
		13,939
- no debt	-4,267	
		9,672
- missing values	-764	
Final sample		*8,908*

Table 2.3: Sample break-down by year, age and industry

Panel A: BY YEAR			**Panel B**: BY AGE (in years)		
	#	%		#	%
2003	1,306	14.7%	> 5, <= 10	815	9.1%
2004	1,281	14.4%	> 10, <= 15	1,227	13.8%
2005	1,276	14.3%	> 15, <= 20	1,624	18.2%
2006	1,156	13.0%	> 20, <= 25	1,110	12.5%
2007	1,223	13.7%	> 25	4,132	46.4%
2008	1,331	14.9%			
2009	1,335	15.0%			
Total	8,908	100.0%	Total	8,908	100.0%

Panel C: BY INDUSTRY (Nace-BEL 2003)			
		#	%
Sections A B C	Agriculture, fishing, natural resources	70	0.8%
Section D	Manufacturing	2,866	32.2%
Section F	Construction	701	7.9%
Section G	Retailing	3,092	34.7%
Section H	Hotels and restaurants	88	1.0%
Section I	Transport and communication	836	9.4%
Section K	Services to companies	1,255	14.1%
	Total	8,908	100.0%

Table 2.4: Descriptive statistics

DEPENDENT VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
Cost of debt	0.096	0.128	0.023	0.053	0.195	0.172
TEST VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
AQ	-0.045	0.032	-0.086	-0.037	-0.013	0.073
CONTROL VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
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 = 8,908. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *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.

Table 2.5: Link between AQ and cost of debt

QUINTILE	Avg. 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)

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

Table 2.6: Correlation matrix

VARIABLE	(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

Bivariate Pearson correlation coefficients. N = 8,908. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.

Table 2.7: Cost of debt regressions

	EXP SIGN	**Panel A:** BASIC MODEL		**Panel B:** FULL MODEL	
		COEF	(p-value)	COEF	(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)

Table 2.7: Cost of debt regressions (cont'd)

F-stat	N/A	316.13*** (0.000)	47.64*** (0.000)
N	N/A	8,908	8,908
Average R^2	N/A	0.201	0.206

Coefficients from Fama MacBeth (1973) regressions. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendices

Appendix 2.1: Truncation and excluding retailing and manufacturing industries

	EXP SIGN	**Panel A:** TRUNCATION		**Panel B:** SMALL INDUSTRIES	
		COEF	(p-value)	COEF	(p-value)
Constant		0.120***	(0.000)	0.150***	(0.002)
AQ	-	*-0.083***	*(0.027)*	*-0.409***	*(0.018)*
Size	-	-0.002	(0.215)	0.002	(0.276)
CF performance	- /+	0.011	(0.244)	-0.025**	(0.041)
Age	- /+	0.001	(0.446)	-0.010**	(0.015)
Leverage	- /+	-0.120***	(0.000)	-0.253***	(0.000)
Interest coverage	-	-0.000**	(0.039)	-0.000***	(0.004)
Asset tangibility	-	-0.017***	(0.004)	0.040*	(0.060)
Negative equity	+	0.028***	(0.000)	0.076***	(0.002)
Growth	+	0.008	(0.416)	0.010	(0.566)
Maturity	?	0.011***	(0.008)	0.021*	(0.068)
Secured status	?	-0.006**	(0.022)	-0.029***	(0.001)
Primary sector	?	-0.006	(0.453)	N/A	
Manufacturing	?	-0.006**	(0.016)	N/A	
Construction	?	-0.005	(0.166)	N/A	
Hotels and restaurants	?	-0.000	(0.939)	N/A	
Transport	?	-0.006**	(0.030)	N/A	
Services	?	-0.001	(0.795)	N/A	

Appendix 2.1: Truncation and excluding retailing and manufacturing industries (cont'd)

F-stat	N/A	435.8*** (0.000)	20.9*** (0.001)
N	N/A	7,213	2,950
Average R^2	N/A	0.162	0.262

Coefficients from Fama MacBeth (1973) regressions. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendix 2.2: Absolute residuals

	EXP SIGN	**Panel A:** FINAL SAMPLE		**Panel B:** BROADER SAMPLE	
		COEF	(p-value)	COEF	(p-value)
Constant		0.160***	(0.000)	0.185***	(0.000)
AQ	-	*-0.155***	*(0.001)*	*-0.168***	*(0.000)*
Size	-	-0.002	(0.370)	-0.002	(0.397)
CF performance	- /+	0.027*	(0.071)	0.008	(0.307)
Age	- /+	0.003*	(0.069)	-0.001	(0.721)
Leverage	- /+	-0.244***	(0.000)	-0.284***	(0.000)
Interest coverage	-	-0.000***	(0.004)	-0.000***	(0.001)
Asset tangibility	-	-0.018**	(0.018)	-0.012*	(0.080)
Negative equity	+	0.066***	(0.000)	0.094***	(0.000)
Growth	+	0.016	(0.208)	0.008	(0.182)
Maturity	?	0.026***	(0.001)	0.034***	(0.000)
Secured status	?	-0.017***	(0.002)	-0.022***	(0.000)
Primary sector	?	0.008	(0.723)	-0.006	(0.548)
Manufacturing	?	-0.016***	(0.009)	-0.012***	(0.006)
Construction	?	-0.013*	(0.093)	-0.022***	(0.000)
Hotels and restaurants	?	0.030**	(0.040)	0.045**	(0.012)
Transport	?	-0.006	(0.253)	-0.012***	(0.006)
Services	?	0.014*	(0.089)	0.021***	(0.004)

Appendix 2.2: Absolute residuals (cont'd)

F-stat	N/A	35.4***	(0.000)	897.0***	(0.000)
N	N/A	8,908		19,044	
Average R^2	N/A	0.204		0.198	

Coefficients from Fama MacBeth (1973) regressions. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendix 2.3: Timely loss recognition

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

Panel A1: BEFORE TAX			**Panel B1:** AFTER TAX		
	COEF	(p-value)		COEF	(p-value)
$\hat{\tau}_0$	0.039***	(0.000)	$\hat{\tau}_0$	0.034***	(0.000)
$\hat{\tau}_1$	-0.040***	(0.000)	$\hat{\tau}_1$	-0.038***	(0.000)
$\hat{\tau}_2$	-0.568***	(0.000)	$\hat{\tau}_2$	-0.605***	(0.000)
$\hat{\tau}_3$	0.252***	(0.000)	$\hat{\tau}_3$	0.217***	(0.000)
$\hat{\tau}_4$	-0.037***	(0.000)	$\hat{\tau}_4$	-0.032***	(0.000)
$\hat{\tau}_5$	0.034***	(0.000)	$\hat{\tau}_5$	0.031***	(0.000)
$\hat{\tau}_6$	0.456***	(0.000)	$\hat{\tau}_6$	0.495***	(0.000)
$\hat{\tau}_7$	-0.606***	(0.000)	$\hat{\tau}_7$	-0.722***	(0.000)
F-stat	363.1***	(0.000)	F-stat	476.2***	(0.000)
N	13,804		N	13,939	
R^2-adj	0.155		R^2-adj	0.193	

Appendix 2.3: Timely loss recognition (cont'd)

$$\Delta NI_{i,t} = \tau_0 + \tau_1 * NEG(\Delta NI)_{i,t-1} + \tau_2 * \Delta NI_{i,t-1} + \tau_3 * NEG(\Delta NI)_{i,t-1} * \Delta NI_{i,t-1} + \tau_4 * Highest\ AQ\ quintile_i + \tau_5 * Highest\ AQ\ quintile_i * NEG(\Delta NI)_{i,t-1} + \tau_6 * Highest\ AQ\ quintile_i * \Delta NI_{i,t-1} + \tau_7 * Highest\ AQ\ quintile_i * NEG(\Delta NI)_{i,t-1} * \Delta NI_{i,t-1} + \varepsilon_{i,t}$$

Panel A2: BEFORE TAX			**Panel B2:** AFTER TAX		
	COEF	(p-value)		COEF	(p-value)
$\hat{\tau}_0$	0.067***	(0.000)	$\hat{\tau}_0$	0.060***	(0.000)
$\hat{\tau}_1$	-0.060***	(0.000)	$\hat{\tau}_1$	-0.059***	(0.000)
$\hat{\tau}_2$	-0.652***	(0.000)	$\hat{\tau}_2$	-0.676***	(0.000)
$\hat{\tau}_3$	0.391***	(0.000)	$\hat{\tau}_3$	0.361***	(0.000)
$\hat{\tau}_4$	-0.064***	(0.000)	$\hat{\tau}_4$	-0.056***	(0.000)
$\hat{\tau}_5$	0.053***	(0.000)	$\hat{\tau}_5$	0.049***	(0.000)
$\hat{\tau}_6$	0.562***	(0.000)	$\hat{\tau}_6$	0.529***	(0.000)
$\hat{\tau}_7$	-0.736***	(0.000)	$\hat{\tau}_7$	-0.894***	(0.000)
F-stat	200.8***	(0.000)	F-stat	241.1***	(0.000)
N	5,521		N	5,575	
R^2-adj	0.202		R^2-adj	0.232	

Coefficients from OLS regressions. ΔNI_t = Change in net income in *t* compared to *t-1* / opening TA, $NEG(\Delta NI)_{t-1}$ = 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, $Highest\ AQ\ quintile$ = dummy taking 1 if the observation has a better AQ than the p80 observation (considering all years) - 0 otherwise. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendix 2.4: Cost of debt regressions with the four accounting-based EQ measures

	Panel A: AQ		**Panel B**: Smoothness		**Panel C**: Predictability		**Panel D**: Persistence		**Panel E**: ALL	
	COEF	(p-value)	COEF	(p-value)	COEF	(p-value)	COEF	(p-value)	COEF	(p-value)
	COEF * p90-p10		COEF * p90-p10		COEF * p90-p10		COEF * p90-p10		COEF * p90-p10	
Constant	0.144***	(0.000)	0.177***	(0.000)	0.164***	(0.000)	0.176***	(0.000)	0.146***	(0.000)
AQ	*-0.267****	*(0.001)*							*-0.292****	*(0.001)*
	194.4 basis points								*213.2 basis points*	
Smoothness			*0.000*	*(0.824)*					*0.005*	*(0.206)*
Predictability					*-0.103***	*(0.016)*			*0.020*	*(0.410)*
					76.2 basis points					
Persistence							*-0.005*	*(0.119)*	*-0.004*	*(0.219)*
Size	-0.001	(0.609)	-0.002	(0.224)	-0.002	(0.376)	-0.002	(0.254)	-0.001	(0.568)
CF performance	0.026*	(0.072)	0.029*	(0.057)	0.028*	(0.060)	0.030**	(0.046)	0.026*	(0.063)
Age	0.004**	(0.034)	0.002	(0.198)	0.003	(0.117)	0.002	(0.143)	0.004**	(0.029)
Leverage	-0.243***	(0.000)	-0.245***	(0.000)	-0.243***	(0.000)	-0.244***	(0.000)	-0.244***	(0.000)
Interest coverage	-0.000***	(0.003)	-0.000***	(0.004)	-0.000***	(0.003)	-0.000***	(0.005)	-0.000***	(0.004)
Asset tangibility	-0.015*	(0.050)	-0.020**	(0.014)	-0.019**	(0.020)	-0.020**	(0.013)	-0.014*	(0.062)
Negative equity	0.062***	(0.000)	0.073***	(0.000)	0.065***	(0.000)	0.073***	(0.000)	0.065***	(0.000)
Growth	0.016	(0.200)	0.016	(0.198)	0.016	(0.202)	0.016	(0.214)	0.016	(0.204)
Maturity	0.026***	(0.001)	0.025***	(0.001)	0.025***	(0.001)	0.025***	(0.001)	0.026***	(0.001)
Secured status	-0.016***	(0.002)	-0.018***	(0.002)	-0.017***	(0.002)	-0.018***	(0.002)	-0.016***	(0.002)

Appendix 2.4: Cost of debt regressions with the four accounting-based EQ measures (cont'd)

Primary sector	0.005	(0.797)	0.012	(0.582)	0.010	(0.627)	0.010	(0.626)	0.005	(0.827)
Manufacturing	-0.017***	(0.007)	-0.016***	(0.010)	-0.016***	(0.009)	-0.016***	(0.009)	-0.017***	(0.007)
Construction	-0.013*	(0.091)	-0.013*	(0.081)	-0.012*	(0.095)	-0.013*	(0.078)	-0.013*	(0.074)
Hotels and restaurants	0.030**	(0.044)	0.029**	(0.046)	0.029**	(0.047)	0.029**	(0.047)	0.029**	(0.044)
Transport	-0.007	(0.168)	-0.005	(0.326)	-0.005	(0.324)	-0.005	(0.321)	-0.007	(0.150)
Services	0.016*	(0.055)	0.014*	(0.078)	0.016*	(0.054)	0.014*	(0.079)	0.015*	(0.062)
F-stat	316.1***	(0.000)	758.1***	(0.000)	341.5***	(0.000)	310.1***	(0.000)	23.1***	(0.001)
N	8908		8908		8908		8908		8908	
Average R^2	0.201		0.202		0.202		0.202		0.207	

Coefficients from Fama MacBeth (1973) regressions. *Cost of debt* = interest expense *t+1* / average debt *t+1*, *AQ*: see section 1.4.2 for exact definition, *Smoothness*, *Predictability*, and *Persistence* are EQ measures as defined in Francis et al. (2004), *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Appendix 2.5: Cost of new debt and audited firms

	EXP SIGN	**Panel A:** Cost of new debt		**Panel B:** AUDITED FIRMS	
		COEF	(p-value)	COEF	(p-value)
Constant		0.121***	(0.000)	0.136***	(0.006)
AQ	-	*-0.188***	*(0.004)*	*-0.356***	*(0.000)*
Size	-	-0.001	(0.511)	-0.000	(0.969)
CF performance	- /+	0.023**	(0.030)	0.024	(0.114)
Age	- /+	-0.001	(0.583)	0.003	(0.223)
Leverage	- /+	-0.155***	(0.000)	-0.253***	(0.000)
Interest coverage	-	-0.000**	(0.021)	-0.000***	(0.009)
Asset tangibility	-	-0.008	(0.412)	-0.024***	(0.000)
Negative equity	+	0.039***	(0.002)	0.066***	(0.000)
Growth	+	0.006	(0.454)	0.016	(0.243)
Maturity	?	0.050***	(0.000)	0.028***	(0.006)
Secured status	?	-0.005	(0.112)	-0.014**	(0.012)
Primary sector	?	-0.021*	(0.084)	-0.021	(0.141)
Manufacturing	?	-0.010	(0.124)	-0.016**	(0.014)
Construction	?	-0.017***	(0.004)	-0.008	(0.320)
Hotels and restaurants	?	0.034	(0.168)	0.024**	(0.020)
Transport	?	-0.005	(0.399)	-0.003	(0.708)
Services	?	-0.004	(0.352)	0.020*	(0.062)

Appendix 2.5: Cost of new debt and audited firms (cont'd)

F-stat	N/A	245.9***	(0.000)	91.4***	(0.000)
N	N/A	6,124		6,416	
Average R^2	N/A	0.148		0.212	

Coefficients from Fama MacBeth (1973) regressions. *Cost of new debt*: see section 2.5.3 for exact definition, *AQ*: see section 1.4.2 for exact definition, *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. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

CHAPTER 3:

THE IMPACT OF FINANCIAL REPORTING QUALITY ON THE DEBT MATURITY STRUCTURE OF PRIVATELY-HELD FIRMS †

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† The work in this chapter is co-authored by Heidi Vander Bauwhede and Philippe Van Cauwenberge. The authors thank the participants at the 2014 Ph.D. Day at Ghent university, a 2014 Research Seminar at Iéseg School of Management, the 2014 Research in Entrepreneurship and Small Business (RENT) Annual Conference, the 2014 Annual Conference on SMEs, Entrepreneurship and Innovation, the 2015 Annual Conference of the European Accounting Association (EAA), and the 2015 Corporate Finance Day Meeting for useful comments on earlier versions of this paper entitled 'On the Bank Financing of Informationally Opaque Small and Medium-sized Enterprises (SMEs)' and 'The Impact of Financial Reporting Quality on SMEs' Bank Debt Maturity Structure: Evidence from Belgian SMEs'.

Abstract

This study empirically examines whether the debt maturity structure of privately-held firms is associated with the quality of their earnings number. We argue that earnings numbers with a higher ability to better predict future cash flows lower information asymmetries between privately-held firms and their creditors and hence improve the access of privately-held firms to long term debt. Furthermore, this study empirically examines whether the relationship between privately-held firms' EQ and their debt maturity is mediated by the level of their fundamental risk. Using detailed financial statement information of a sample of Belgian privately-held firms, we find that overall EQ is positively associated with the likelihood of having long term debt and with the proportion of long term debt in total debt conditional upon having long term debt. Additionally, we find that the EQ of privately-held firms is generally positively associated to these firms' likelihood of obtaining new long term debt. Further, we report evidence that there are differences between SMEs and larger privately-held firms. The latter is consistent with fundamental risk mediating the relationship between EQ and debt maturity.

Keywords FRQ - Debt maturity - Privately-held firms

JEL classifications G21 - G32 - M41

3.1 Introduction

In most countries, privately-held firms predominate listed firms both in absolute numbers and in terms of employment, innovation and growth (Cole 2013, Chen et al. 2011, Ortiz-Molina and Penas 2008). For a long period of time however, in many domains of both the accounting and finance literature, the focus in empirical research has been primarily on large listed firms (Cole 2013, Chen et al. 2011). It is only over the last decades that academics in different areas have gradually acknowledged the notion that 'small businesses are not just larger firms scaled down' (Scherr and Hulburt 2001, p.85) and that research interests have been broadened to privately-held firms.

Aside from the seminal studies by Botosan (1997) and Sengupta (1998), the research stream that looks into the effect of FRQ on corporate financing took off in the mid-2000s and evolved in fact in a similar vein. The work by Francis et al. (2004) analyzed the effect of FRQ on the cost of equity financing of listed firms. Other work in this field studied the effect of FRQ on different aspects of the financial debt financing of listed firms (Hasan et al. 2012, Bharath et al. 2008, Francis et al. 2005). The bulk of the studies in FRQ research explores the financial statements of listed firms and neglects that even the smallest listed firms are relatively large (Chen et al. 2011, Scherr and Hulburt 2001).

Also with respect to the relationship between FRQ and debt maturity, privately-held firms have been largely overlooked in prior literature. Whereas García-Teruel et al. (2010) provide evidence of a positive association between the FRQ of Spanish listed firms and these firms' debt maturity structure, this relationship is, to the best of our knowledge, still largely unexplored in a private setting[30]. This is most likely related to the limited availability of data for privately-

[30] We are only aware of two related studies, i.e., Ortiz-Molina and Penas (2008) and Scherr and Hulburt (2001). Both of these studies intend to control in their debt maturity model for, amongst other things, information asymmetry. However, since neither

held firms (Hope et al. 2013). Verifying whether and to what extent the positive association between FRQ and debt maturity from García-Teruel et al. (2010) translates to privately-held firms is nonetheless an interesting research question since the existence of such an association for privately-held firms is a priori far from certain. A number of widely cited studies (Hope et al. 2013, Burgstahler et al. 2006, Ball and Shivakumar 2005) have documented that, compared to listed firms, privately-held firms exhibit lower FRQ, which could dilute the FRQ effect (Chen et al. 2011). A first explanation for the lower FRQ of privately-held firms is that for these firms there is less market demand for high-quality financial information since information asymmetry is resolved by means of an 'insider access' model in which private information is communicated on an 'as-needed' basis (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). A commonly used argument within this respect is that privately-held firms are typically more closely held than listed firms. On top of the greater ownership concentration for privately-held firms, managerial ownership is likely to be higher and shareholder turnover is expected to be lower compared to listed firms. The specific ownership structure of privately-held firms implies that shareholders are more actively involved in management, which reduces their reliance on financial statement information and makes the quality of these financial statements less important (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005).

A second explanation for the lower FRQ of privately-held firms is that these firms' financial statements are often more influenced by taxation and dividend policies which makes them less informative for external users (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). On top of that, privately-held firms have a weaker information environment with less information publicly available and a smaller variety of information sources (Chen et al. 2011).

Ortiz-Molina and Penas (2008) nor Scherr and Hulburt (2001) take a FRQ perspective in mind, their findings are not very helpful for our study.

This said, there also exist arguments in support of a significant association between FRQ and debt maturity for privately-held firms. Firstly, while it is plausible to assume that structural differences between privately-held firms and listed firms – such as differences in the ownership structure and differences in the information environment – weaken the effects of FRQ for privately-held firms, there seems to be no reason why the basic theoretical mechanisms would no longer be in place for privately-held firms. That is to say, whereas the FRQ effects could be magnified in a public setting, higher FRQ can still reduce the information asymmetry in a private setting and as such improve the efficient allocation of capital. If that is the case, the question relates to the magnitude of the FRQ effects for privately-held firms rather than to their existence (Chen et al. 2011). Likewise, a number of recent studies in the FRQ discipline confirms the relevance of FRQ in a private setting, for other, though related research questions. The findings in Chen et al. (2011) demonstrate that higher FRQ reduces the under- and overinvestment behaviour of privately-held firms in emerging countries, a setting that is ex ante less conducive for high FRQ. Vander Bauwhede et al. (2015), García-Teruel et al. (2014a, 2014b) and Van Caneghem and Van Campenhout (2012) examine the effect of FRQ on different aspects of the debt financing of SMEs. Their results demonstrate that higher FRQ by SMEs decreases their cost of debt, increases their financing with bank debt, increases their financing from suppliers and increases their overall leverage respectively.

Secondly, given the importance of information asymmetry in private debt markets and the unique role of loan maturity in addressing this information asymmetry (Ortiz-Molina and Penas 2008), it is even conceivable that the effect of FRQ on debt maturity is particularly important for privately-held firms. Another fact that could work in this direction is that, besides financial statements, there are fewer competing sources of information on privately-held firms than on listed firms.

In sum, to the best of our knowledge, the current state of the literature is inconclusive with regard to the relationship between FRQ and debt maturity in a private setting[31]. This remains thus an open empirical question. Moreover, past studies have only examined the effect of FRQ on debt maturity in general and largely neglected that a lot of firms have no long term debt in the first place.

In addition to investigating the overall effect of privately-held firms' FRQ on their debt maturity using a two-step approach, we also look into whether the magnitude of these effects, if established, varies with fundamental risk. In this respect we argue that any FRQ effect will be more pronounced for SMEs than for larger privately-held firms since SMEs entail more fundamental risk and hence put their creditors more at risk. To the best of our knowledge, no similar attempts were undertaken in prior literature, neither in the private setting nor in the listed setting.

To address these questions we have constructed a dataset with 35,017 Belgian financial statements for the years from 2004 until 2014. This specific research context was chosen deliberately as Belgium is one of the few countries where longitudinal financial statement data for (even small) privately-held firms are readily available. An important additional benefit of employing Belgian data is that it has a high level of detail.

Using AQ as FRQ measure, the findings from this study indicate that privately-held firms' AQ is positively associated both with the probability of having long term debt and with the relative importance of long term debt in total debt conditional upon having long term debt. On top of

[31] The debt structure of privately-held firms further consist mainly of bank debt and supplier financing and is as such considerably different from the one of listed firms that includes for instance bonds (Berger and Udell 1998). This as well makes the FRQ effect on the debt maturity of privately-held firms unclear. Still another point that adds to the uncertainty concerning whether and to what extent FRQ affects privately-held firms' debt maturity structure is the fact that firm size influences both FRQ and debt maturity.

that, additional analysis shows that privately-held firms with higher AQ stand a larger chance of realizing a net increase in long term debt. These findings imply that higher AQ facilitates the contracting of long term debt for privately-held firms. That is to say, it increases the chance of receiving long term debt for those firms that do not have long term debt and increases the proportions of long term debt in total debt for those firms that already have long term debt, and, for all firms, it increases the likelihood of obtaining new long term debt.

Furthermore, consistent with fundamental risk mediating the relationship between FRQ and debt maturity, we report evidence that there are differences between SMEs and larger privately-held firms.

This study and its findings are important for at least two reasons. Firstly, despite the economic significance of privately-held firms[32] and the differences that exist with listed firms, relatively little is known about the reporting practices of privately-held firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). The findings from this study are important for they extend the empirical evidence on the reporting practices of privately-held firms and for they suggest that high-quality financial reporting can reduce the information asymmetry between privately-held firms and their creditors, which can produce important economic benefits for privately-held firms.

Secondly, due to the inaccessibility of public debt markets and hence the limited options for long term debt, obtaining long term debt is a vital issue for a lot of privately-held firms. The findings from this study have the potential to provide insights to managers of these privately-held firms that could lower their financial constraints and improve their access to long term debt. Furthermore, long term debt is closely related to the investments firms can undertake

[32] In Europe, SMEs alone account for almost 58% of the total value added and for more than 67% of the employment (Vermoesen et al. 2013).

(Vermoesen et al. 2013)[33]. Hence if managers from constrained privately-held firms learn how they can improve their access to long term debt this could also boost their investments. Given the omnipresence of privately-held firms this could have far-reaching economic consequences.

This study contributes to various streams in the academic literature. Firstly, this study adds to the FRQ literature by demonstrating that even for privately-held firms, of which it is widely accepted that they exhibit lower FRQ than listed firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005), FRQ still has a prominent role in debt contracting. By highlighting that FRQ is an important determinant of privately-held firms' debt maturity, the findings from this study suggest that financial statements of privately-held firms, if available, are in fact used by market participants. As such, they provide evidence of a market demand for high-quality information by privately-held firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). The Heckman selection models (Heckman 1979) that are applied in this study are another contribution to the FRQ literature and to the study by García-Teruel et al. (2010) more in particular. Unlike the fixed effects and GMM models in García-Teruel et al. (2010), Heckman selection models are two-step regression procedures that acknowledge that a firm's debt maturity is the outcome of two separate incidents. The first one concerns the presence of long term debt in the firm's financial structure, the second one is related to the relative importance of long term debt as compared to short term debt conditional upon having long term debt. The findings from this study generally provide support for a positive association between the FRQ of privately-held firms and both of these incidents.

[33] The rationale for this is the maturity matching principle or the matching of a firm's debt maturity with the maturity of its asset base. In short, this implies that, for having a sustainable situation, longer-lived assets should be financed with longer-maturity funds (i.e., long term debt or alternatively equity) to ensure that interest payments and capital outlays are aligned with incoming cash flows (Heyman et al. 2008, Scherr and Hulburt 2001).

Secondly, this study adds to the FRQ literature and to the SME literature by revealing that the effect of the FRQ of privately-held firms on these firms' debt maturity structure is mediated by fundamental risk. In fact, we provide evidence of differences between SMEs and larger privately-held firms with respect to the effect of FRQ on debt maturity.

Thirdly, this study adds to the SME literature by showing that the FRQ of SMEs has not only an impact on their capital structure and their cost of debt, but also on their debt maturity.

The paper continues as follows. Section 3.2 reviews the related literature and develops our hypotheses. Section 3.3 discusses the research design. Section 3.4 describes the sampling. Section 3.5 provides the empirical findings, addresses potential endogeneity in the FRQ-debt maturity relationship and tests for the overall robustness of the results. Section 3.6 concludes the paper.

3.2 Literature review and hypotheses development

For providers of credit, the foremost important risk in granting credit to a privately-held firm is the risk of non-payment by that firm. Hence, the predicted future cash flows of the firm (representing its future reimbursement capacity) play a central role in the credit decision. For predicting future cash flows, creditors will generally make use of financial statement information (García-Teruel et al. 2014a, Niemi and Sundgren 2012). As a matter of fact, since privately-held firms are typically not monitored by credit rating agencies nor by the financial press (Ortiz-Molina and Penas 2008, Hernández-Cánovas and Martínez-Solano 2007), financial statement information is the most important information source for the majority of them. The biggest hurdle for creditors in predicting privately-held firms' future cash flows is to overcome the often severe information asymmetry that characterizes the relationships between privately-held firms and creditors (Van Caneghem and Van Campenhout 2012, Ortiz-Molina and Penas 2008).

There is a large literature according to which lower FRQ is argued to increase information asymmetry. Related to this, various empirical studies, particularly in the field of listed firms, have employed FRQ as proxy for information asymmetry and have demonstrated that creditors value FRQ (e.g., Bharath et al. 2008, Francis et al. 2005). They show that whereas higher FRQ justifies better credit terms, lower FRQ translates into more unfavorable ones, such as higher interest rates, shorter loan maturities and more collateral requirements and debt covenants (Hasan et al. 2012, García-Teruel et al. 2010, Bharath et al. 2008, Francis et al. 2005, Sengupta 1998). As concerns loan pricing, the negative association with FRQ is also confirmed for privately-held firms on a sample of SMEs (Vander Bauwhede et al. 2015). In sum, these findings can be interpreted as lower FRQ triggering creditors to impose measures to protect themselves against the higher information asymmetry that lower FRQ provokes. They will do so by ex ante adjusting price and/or non-price credit terms. Demanding higher risk premia is only one example of this.

Consistent with these empirical studies, one could postulate that as opposed to setting more stringent credit terms, creditors may in some occasions simply refuse to grant funds or may reduce the loan amount to firms that score badly on FRQ and hence exhibit high levels of information asymmetry (i.e., rationing) (Stiglitz and Weiss 1981)[34]. Recent work by Van Caneghem and Van Campenhout (2012) and García-Teruel et al. (2014a) started to explore this possibility for privately-held firms and for SMEs in particular. Van Caneghem and Van Campenhout (2012) document that for Belgian SMEs, lower FRQ is associated with lower overall leverage. García-Teruel et al. (2014a) report evidence on a positive association between

[34] Following Stiglitz and Weiss (1981), as compared to imposing more harsh credit terms, rationing may even prove to be a more beneficial protection mechanism for creditors to use when they are confronted with firms with low FRQ. This is because imposing more harsh credit terms could increase the riskiness of their loan portfolio, either by discouraging safer borrowers or by inducing clients to engage in riskier investments (Stiglitz and Weiss 1981).

FRQ and bank debt for Spanish SMEs[35]. In line with De Andrés Alonso et al. (2005), they conclude from their results that higher FRQ mitigates information asymmetry and the adverse selection and moral hazard problems ascribed to it, which eases the access to bank debt. García-Teruel et al. (2014a) do however not consider non-bank debt nor that information asymmetry most likely impacts the maturity structure of debt.

Regarding the effect of information asymmetry on debt maturity, it is to be expected that information asymmetry influences long and short term debt in a different way (García-Teruel et al. 2010). In fact, information asymmetry will affect the position of creditors more adversely in the case of longer term debt. The reason for the more detrimental impact of information asymmetry on longer term debt is twofold. Firstly, the presence of high information asymmetry hinders the forecasting of future cash flows, a problem that is aggravated as the time horizon of forecasting gets longer. Secondly, higher information asymmetry implies that creditors have to devote more effort and money to the monitoring process (García-Teruel et al. 2010, Ortiz-Molina and Penas 2008), especially when it concerns long term debt. Therefore, to protect themselves against information asymmetry and the informational problems it provokes, creditors will be inclined to use short term debt as a contracting device. More in particular, curtailing loan maturities can be considered a debt covenant that is easy to enforce and that can force borrowers into frequent renegotiations of contract terms with the lender (García-Teruel et al. 2010, Ortiz-Molina and Penas 2008, Berger and Udell 1998)[36].

Higher FRQ on the contrary has the potential to lower information asymmetry. As such, it can be considered as a means to lower the problems stemming from information asymmetry

[35] In a similar study (i.e., García-Teruel et al. 2014b), these authors show that FRQ is also positively associated with supplier financing.

[36] Alternatively or additionally they can ask higher interest rates, more collateral, etc. (e.g., Bharath et al. 2008, Francis et al. 2005).

between privately-held firms and their creditors (Vander Bauwhede et al. 2015, García-Teruel et al. 2014a, García-Teruel et al. 2010). Higher FRQ will accordingly improve debt contracting and debt monitoring (Healy and Palepu 2001), diminishing the need for creditors to enclose protective measures within the debt contract or to reject at least partially the loan application. Therefore, higher FRQ is expected to ease the access to debt overall and to long term debt in particular in a way that privately-held firm with higher FRQ have a higher debt maturity. García-Teruel et al. (2010) found this effect in a sample of listed firms, but given the fundamentally different setting of privately-held firms, whether or not this holds for privately-held firms remains an open empirical question.

H1: There is a positive association between the FRQ of privately-held firms and their proportion of long term debt financing

In addition, this study explores whether the effect of FRQ on the debt maturity of privately-held firms varies with fundamental risk. We reason that the role of FRQ will be more pronounced for smaller firms since a smaller firm size increases the risk faced by creditors, which incites these creditors to a more rigorous inquiry of the firm's FRQ[37].

The underlying rationale is based on the concept of 'fundamental risk' which was introduced by Yee (2006). In a context of listed firms, this study provides a theoretical model of portfolio construction in which idiosyncratic firm risk is decomposed into EQ risk and fundamental risk. EQ risk is stipulated as risk stemming from noisy earnings figures, caused by either deficiencies in accounting rules or by the firm's application of those rules. It involves "hidden accrual errors that reverse in subsequent periods" (Yee 2006, p. 833). As such, it is very akin to the AQ

[37] This is in line with the intuitive notion that as the risk for creditors rises, creditors will be more cautious and they will strive to make the best use of the information that is available to them in order to carefully estimate and manage this risk. Eventually, this will bring creditors to grant credit to those firms that involve the least risk, i.e., the ones with the highest FRQ.

concept that is widely used throughout the academic accounting literature (e.g., Hope et al. 2013, Chen et al. 2011, García-Teruel et al. 2010, Francis et al. 2005). Fundamental risk, on the other hand, is defined by Yee (2006) as unresolved ambiguity due to shocks in future fundamental earnings. Following Chen et al. (2008) fundamental risk boils down to uncertainty about a firm's future cash flows and ultimately relates to uncertainty produced by the nature of the firm's business and its operating environment. The central prediction from the Yee (2006) model is that the effect of EQ risk on a firm's equity risk premium is increasing in fundamental risk, i.e., the larger the fundamental risk of the firm, the larger the effect of the firm's EQ risk on its equity risk premium. Chen et al. (2008) confirmed this relation empirically.

We argue that the prediction from the Yee (2006) model can be extrapolated to other settings, such as settings where investors are banks or where debtors are privately-held firms. In a context of bank debt, Plumlee et al. (2015) document that banks charge borrowers for which private information about forthcoming patents is accessible a lower loan spread than borrowers for which that information is not available. Furthermore, they demonstrate that borrowers that share with their banks private information with a higher level of detail regarding the future expected cash flows of the forthcoming patents obtain a greater reduction in loan spread. Interestingly, the latter effect is found to be stronger for borrowers with less ascertainable future cash flows due to a riskier business model or operating environment. The same is true for borrowers that have a higher probability of default. Essentially, these findings suggest that similarly to a listed setting (Yee 2006), the merits of more detailed information rise with fundamental risk.

Considering then privately-held firms, smaller firms often operate in more competitive industries (Van Caneghem and Van Campenhout 2012) and the operations of smaller firms tend to be less stable, less predictable and less diversified than those of larger firms (Cole et al. 2013, Heyman et al. 2008, Dechow and Dichev 2002). For that reason, smaller firms are generally deemed to entail more fundamental risk than larger ones. This is also corroborated by the higher

default probability amid smaller firms (Cole et al. 2013, Heyman et al. 2008). Given the arguments above, we hypothesize that any effect of FRQ on debt maturity will be more pronounced for smaller privately-held firms than for larger privately-held entities[38].

H2: The association between the FRQ of privately-held firms and their proportion of long term debt financing will be more pronounced for smaller privately-held firms than for larger privately-held firms

3.3 Research design

To test the hypotheses listed in section 3.2 of this paper, a regression approach is applied in which debt maturity is modelled as a function of our test variable (i.e., FRQ) and a number of control variables. These controls are taken from prior related literature (e.g., Degryse et al. 2012, García-Teruel et al. 2010, Heyman et al. 2008, Sogorb-Mira 2005, Scherr and Hulburt 2001, Michaelas et al. 1999) and relate to size, age, asset tangibility, collateral, profitability, default risk, growth, debt financing, industry, and time. Since financial statement data are employed and since previous-year financial reports are the most recent that can be used for loan contracting practices, the independent variables in our models are lagged one period[39]. This also

[38] A smaller firm size does not only induce more risk for creditors through an intensified fundamental risk but also through an intensified risk of wealth expropriation. Following Pettit and Singer (1985) smaller firms generally exhibit three idiosyncrasies that give rise to the higher risk of wealth expropriation, being a larger ownership stake of managers, a larger flexibility to change the asset base and larger information asymmetry. Similarly to an increase in fundamental risk, an increase in the risk of wealth expropriation could amplify the effect of FRQ on debt maturity for smaller privately-held firms.

[39] As the previous-year financial reports may not be available in the first half of the year, we tested the robustness of the principal results to lagging the independent variables two periods (N = 28,745 firm-years and 15,669 firm-years). We find that the AQ in t-2 has a significant and positive impact both on the probability of having long term debt (not reported, $p<0.01$) and on the relative importance of long term debt in total debt conditional upon having long term debt (not reported, $p<0.01$).

mitigates potential causality issues. Further, to take outliers into account, all continuous variables but age[40] are winsorized at the 1th and 99th percentiles.

To test *H1*, regression equation *(3.1)* is estimated, where i and t index firms and years respectively.

$$Debt\ maturity_{i,t} = \alpha_0 + \alpha_1 * AQ_{i,t-1} + \alpha_2 * Size_{i,t-1} + \alpha_3 * Age_{i,t-1} + \alpha_4 * Asset\ tangibility_{i,t-1} + \alpha_5 * Collateral_{i,t-1} + \alpha_6 * Profitability_{i,t-1} + \alpha_7 * Grey_{i,t-1} + \alpha_8 * Distress_{i,t-1} + \alpha_9 * Past\ growth_{i,t-1} + \alpha_{10} * Growth\ prospects_{i,t-1} + \alpha_{11} * Debt_{i,t-1} + \alpha_{12} * Industry\ median_{i,t-1} + \alpha_{13-22} * Year\ dummies_t + \varepsilon_{i,t} \quad (3.1)$$

In line with *H1*, a significant and positive α_1 is to be expected.

For testing *H2* two adjustments are made to regression equation *(3.1)*. Firstly, the size variable is replaced by an indicator variable that enables discriminating between smaller and larger privately-held firms. Since prior studies in the field of privately-held firms' FRQ, e.g., Vander Bauwhede et al. (2015), García-Teruel et al. (2014a, 2014b) and Van Caneghem and Van Campenhout (2012), have concentrated predominantly on SMEs and in order to facilitate linking our findings with prior ones, we preferred to focus on the distinction between SMEs and non-SMEs for the operationalization of this indicator variable. As we use data from a EU member state (see section 3.4), we define an SME according to the European Commission's SME definition (European Commission 2014) and apply this definition consistently with prior studies on European data (Vermoesen et al. 2013, Deloof et al. 2007). Accordingly, a company

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

If in parallel with this winsorizing, all continuous variables (except for age) are truncated at their 1th and 99th percentiles, or if the rough data are used, the results are largely consistent (not reported).

qualifies as an SME when the following criteria are met: (1) headcount in Full-Time Equivalents (FTEs) smaller than 250, (2) annual turnover 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).

Secondly, the model is augmented with the interaction term $AQ * SME$.

Taking into account these adjustments, the regression equation to test *H2* can be summarized as follows.

$$Debt\ maturity_{i,t} = \beta_0 + \beta_1 * AQ_{i,t-1} + \beta_2 * AQ_{i,t-1} * SME_{i,t-1} + \beta_3 * SME_{i,t-1} + \beta_4 * Age_{i,t-1} + \beta_5 * Asset\ tangibility_{i,t-1} + \beta_6 * Collateral_{i,t-1} + \beta_7 * Profitability_{i,t-1} + \beta_8 * Grey_{i,t-1} + \beta_9 * Distress_{i,t-1} + \beta_{10} * Past\ growth_{i,t-1} + \beta_{11} * Growth\ prospects_{i,t-1} + \beta_{12} * Debt_{i,t-1} + \beta_{13} * Industry\ median_{i,t-1} + \beta_{14-23} * Year\ dummies_t + \varepsilon_{i,t} \quad (3.2)$$

In line with *H1* and *H2*, significantly positive β_1 and β_2 are anticipated.

3.3.1 Debt maturity

$Debt\ maturity$ is the dependent variable and is defined as the proportion of average debt with a time to maturity exceeding one year in average total debt[41].

3.3.2 FRQ

FRQ is the test variable and is measured as EQ and more in particular as AQ. In addition to being in line with prior empirical studies (e.g., García-Teruel et al. 2014a, Francis et al. 2005), employing AQ as FRQ metric in a debt setting is consistent with sound theoretical arguments.

[41] In this study, averages in year *t* are computed by taking the average of the values in years *t-1* and *t*.

As mentioned in section 3.2 of this paper, future cash flows have a prominent role in the credit granting process but have to be estimated. Prior research by Dechow et al. (1998) and Dechow (1994) has indicated that, compared to current cash flows, current earnings are superior in predicting future cash flows. The reason for the higher accuracy of earnings-based cash flow forecasts can be found in the accruals, i.e., the difference between earnings and cash flows. These accruals represent the non-cash component of earnings. Basically, accruals shift cash flows over time so that the book value of earnings matches with the economic consequences of the firm's actions. Hence, accruals mitigate the timing and mismatching problems inherent in cash flows (Dechow and Dichev 2002, Dechow 1994).

Dechow and Dichev (2002, pp. 35-36) argue that the accrual process is not flawless though. It involves making a lot of assumptions and estimates and estimation errors (and subsequent corrections) are inevitable. To give an example, at year-end, managers have to estimate which amount of credit sales will probably not be paid and record a corresponding provision in the books. The higher (lower) this provision, the lower (higher) the company's earnings will be. Errors are unavoidable as there are too many uncertainties regarding, for example, the financial health of the clients. What is more, company managers themselves can have opportunistic motives to influence the accrual process and to manage earnings (see Healy and Wahlen (1999) for a review). Accordingly, this also adds noise to the accruals, reducing their beneficial role. For the purpose of this study, accruals (and earnings) are considered to be of higher quality when they are less affected by estimation errors (either intentional or unintentional) and so allow for a better prediction of the firm's future cash flows. Stated otherwise, higher-quality accruals enable better prediction of the firm's future reimbursement capacity, better assessment of the firm's default probability and as such reduce information asymmetry.

On a practical level, we chose to estimate AQ using the model by Dechow and Dichev (2002) as extended by McNichols (2002). For the computations underlying the AQ metric we refer to section 1.4.2.

3.3.3 Control variables

$Size$ is measured as the natural logarithm of total assets (Van Caneghem and Van Campenhout 2012, Heyman et al. 2008, Sogorb-Mira 2005) and Age as the natural logarithm of age in years (Van Caneghem and Van Campenhout 2012, Ortiz-Molina and Penas 2008), $Asset\ tangibility$ is measured as net property, plant and equipment to total assets and is included to account for maturity matching (Heyman et al. 2008, Scherr and Hulburt 2001) and to control for the potential to provide collateral (García-Teruel et al. 2014a, Cole 2013, Van Caneghem and Van Campenhout 2012, Degryse et al. 2012, Sogorb-Mira 2005, Michaelas et al. 1999). To further control for collateral, a dummy $Collateral$ is enclosed that takes a value of one if at least some of the debt is secured by either the company itself or the government and zero otherwise[42]. $Profitability$ is measured as operating income divided by total assets. Default risk is measured by Altman's Z'-score for privately-held firms (Altman 1983). In particular, two indicator variables are defined to classify the privately-held firms in the sample into three categories depending on their riskiness: the healthy firms with a Z'-score above 2.90 (i.e., the base case), the firms with a medium risk profile as pinpointed by a Z'-score in between 1.23 and 2.90 (indicated by $Grey$), and the weakest firms having a Z'-score of below 1.23

[42] Granting collateral is common practice in small business loan contracting given the high information asymmetry herein (Degryse et al. 2012, Steijvers et al. 2010). By including a measure of collateral, we control for potential interdependencies between collateral and maturity (Dennis et al. 2000) and for the fact that FRQ is likely to influence both collateral and maturity in the case of private debt (Bharath et al. 2008).

(indicated by $Distress$)[43]. $Past\ growth$ is measured as the geometric average growth rate in total assets over the preceding three years (Van Caneghem and Van Campenhout 2012, Heyman et al. 2008), $Growth\ prospects$ is measured as the intangibles-to-total-assets ratio (Van Caneghem and Van Campenhout 2012, Degryse et al. 2012, Sogorb-Mira 2005, Michaelas et al. 1999) and $Debt$ is measured as average total debt to average total assets (García-Teruel et al. 2010).

Besides firm-level control variables, the models are further extended with a variable $Industry\ median$ containing the industry[44]- and year-specific median debt maturity to control for various industry-related practices that influence the debt maturity structure[45] and with year dummies to control for potential changes in macro-economic conditions.

3.3.4 Estimation procedure

The debt maturity measure that was defined in section 3.3.1 is censored. It is limited to values between zero and one, with a relatively large number of zeros. Essentially, this suggest that the debt maturity structure of a privately-held firm can be regarded as the outcome of two subsequent questions. The first question relates to whether or not the considered privately-held firm relies on long term debt to finance its operations, the second question relates to the relative importance of long term debt in total debt conditional upon having long term debt. A first

[43] Employing indicator variables for default risk instead of a continuous measure is in line with Heyman et al. (2008) and Ortiz-Molina and Penas (2008) and is a way to control for a possibly non-monotonic effect of default risk on debt maturity (Diamond 1991).

[44] Industries are defined consistently with the AQ estimations in section 1.4.2.

[45] The results with respect to AQ and AQ * SME are qualitatively unchanged when the industry median variable is replaced by traditional industry dummies (not reported). The unreported analysis with traditional industry dummies further reveals that construction firms tend to have a lower debt maturity whereas hotels and restaurants and firms that deliver services to companies tend to have a higher debt maturity.

possibility to deal with the specific nature of the debt maturity variable is to estimate tobit models. However, an implicit assumption inherent in tobit models is the equality of coefficients in both steps. To the extent that this assumption does not hold, two-step Heckman selection models become a favored alternative for they control for (self-)selection into long term debt (Heckman 1979). In order to choose the most appropriate empirical strategy, for both regression equations *(3.1)* and *(3.2)*, we executed a Likelihood Ratio test (LR test), in which we compare the log likelihood of the tobit model with the log likelihood of a two-step model. The results of these tests demonstrate that the equality of coefficients assumption in tobit models is not valid in our research setup and that Heckman selection models fit the data better (not reported, $p<0.01$). In line with this, we decided to run Heckman selection models. That is to say, in the first step, consistent with regression equation *(3.3)*, we estimate the probability that the sampled privately-held firms have long term debt with a probit model that includes the variables from regression equation *(3.1)* (*(3.2)* respectively). In the second step, we extend regression equation *(3.1)* (*(3.2)* respectively) with the inverse mills ratio from the first step and we estimate this regression using OLS[46]. This is summarized in regression equation *(3.4)*.

Step 1:

$$Debt\ maturity\ (0/1)_{i,t} = \tau_0 + \tau_1 * AQ\ variables + \tau_2 * \boldsymbol{controls} + \varepsilon_{i,t} \qquad (3.3)$$

[46] In the Heckman selection models, the same set of explanatory variables are included in both steps. Due to the non-linearity of the inverse mills ratio this is unlikely to produce multicollinearity issues. Still, based on the idea that bank debt is the main source of long term debt for our sample of privately-held firms, we have used a dummy variable indicating the presence of bank debt as an exclusion restriction, i.e., we included this in the first step but not in the second step. This does not alter our results (see Appendix 3.1).

Step 2:

$$Debt\ maturity\ (>0, <1)_{i,t} = \varphi_0 + \varphi_1 * AQ\ variables + \varphi_2 * \boldsymbol{controls} + \varphi_3 * inverse\ mills\ ratio + \varepsilon_{i,t} \quad (3.4)$$

Where $\boldsymbol{controls}$ is a vector of controls.

In both steps of all models, standard errors are clustered at the firm level to account for non-independent observations (Petersen 2009).

3.4 Data

3.4.1 Belgian setting

Belgium is a typical Continental European country in that few Belgian firms are quoted on a stock exchange and public debt markets are only accessible for large and mature firms. Consequently, most Belgian firms are dependent on the Belgian banking sector, which is strongly developed and provides an important share of the debt financing of Belgian firms (Hanssens et al. 2016, Demirgüç-Kunt and Levine 1999). For two reasons, we believe Belgium offers an interesting research setting to study the relationship between privately-held firms' FRQ and their debt maturity. Firstly, in comparison to other countries, Belgium has imposed rigid reporting requirements on privately-held firms. Belgian regulators have provided prescribed formats of financial statements together with detailed mandatory charts of accounts. All limited liability firms, are obliged by company law to file financial statements with the National Bank of Belgium (NBB) in the agreed format on an annual basis (Van Caneghem and Van Campenhout 2012, Heyman et al. 2008). These regulations imply that yearly, detailed and uniform financial statements are readily available for privately-held firms with limited liability which is in many countries not the case (Kestens et al. 2012).

Secondly, for an important fraction of the Belgian SMEs (as defined by the European SME definition as applied in this study) essentially the same reporting requirements are in place as for larger privately-held firms. That is to say, for Belgian financial statements a distinction is made between the full format and the abbreviated format. Only the smallest firms that fall underneath the cutoffs for the full format are given the option to file their financial statements in the abbreviated format (Vermoesen et al. 2013, Van Caneghem and Van Campenhout 2012, Heyman et al. 2008, Deloof et al. 2007). In our dataset, we only include financial statements submitted in the full format. So that, for the Belgian privately-held firms in our sample, the same reporting requirements are in place for SMEs as for larger privately-held firms[47]. This makes this sample uniquely suited to test for differences in the FRQ effect between SMEs and larger privately-held firms.

Given that a country's legal and institutional environment is expected to influence both FRQ and debt maturity (García-Teruel et al. 2010, Antoniou et al. 2006, Leuz et al. 2003, Demirgüç-Kunt and Maksimovic 1999), a not unimportant advantage of a single-country setting is that this rules out that the results are driven by legal and institutional differences.

3.4.2 Sample

From the Bel-first® database of Bureau Van Dijk, the non-consolidated financial statements filed with the NBB in the full format over the 2004-2014 period are gathered. Financial statements from firms without limited liability and from firms operating in the government, financial and utility industries are not included in the sample (Vermoesen et al. 2013, Minnis 2011, Heyman et al. 2008). Since the focus of this study is on privately-held firms, only firm-

[47] Another justification of this choice is that sales figures are needed for the factors that are added by McNichols (2002) to the Dechow and Dichev (2002) model and sales figures are typically not available in the abbreviated format.

year observations from privately-held firms are withheld. The result is an initial database consisting of 177,566 observations for Belgian privately-held firms with limited liability for the years 2004-2014.

In addition, firm-year observations are left out (1) 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), (2) when there are less than three FTEs to eliminate firm-year observations from firms founded solely for fiscal motives, and (3) when the financial year is shorter or longer than twelve months to ensure impeccable calculation of AQ. In every step, those cases for which the selection conditions could not be verified are deleted as well[48]. Up to this point, the dataset counts 120,998 firm-year observations.

The computation of AQ entails severe data demands, 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 one company- and year-specific AQ number, the AQ model in section 1.4.2 implies that eight consecutive years are needed[49]. As the dataset for this research is limited to 18 years (1997-2014), a company- and year-specific AQ number can only be computed for the 2003-2013 period. This selection step implies a further drop in sample size to 37,196 firm-year observations.

Firm-years observations without debt on their beginning nor ending balance sheet (i.e., 31) are dropped from the dataset as for these observations the dependent variable cannot be computed. Firm-years that entail missing values for the control variables are also discarded. The final

[48] 26,393 firm-year observations were left out because the restructuring criterion could not be verified due to the non-availability of data on the previous year.

[49] 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 for calculating the working capital accruals.

sample counts 35,017 observations for 7,326 Belgian privately-held firms with limited liability within the 2004-2014 period. The sample selection procedure is summarized in Table 3.1.

[Insert Table 3.1 about here]

3.5 Empirical results

3.5.1 Descriptive statistics

Table 3.2 provides a breakdown of the sample by size, age and industry. First of all, in the A Panel, the distribution of the sample over SMEs and non-SMEs following the European SME definition as applied in this study is given. Additionally, for the subset of SMEs, the allocation over so-called micro enterprises, small enterprises and medium-sized enterprises is shown. Note that, a majority of the sampled firms-years (i.e., 60.9%) belong to SMEs and that particularly small and medium-sized firms are well represented in the sample. The B Panel further reveals that the sample comprises rather mature privately-held firms as 49.3% of the firm-year observations or nearly half of the sample size comes from firms older than 26 years. With the youngest firms within the sample being 7 years old and the eldest being over 100 years old, age has a fairly wide distribution (not reported). The C Panel shows in which industries (Nace-BEL sections) the sampled privately-held firms are active and indicates that the majority of the firm-year observations are from firms operating in the retail and manufacturing industries. To end, there are no real concerns about under- or overrepresentation of certain years (not reported) and 73.2% of the financial statements in the sample received an audit (not reported).

[Insert Table 3.2 about here]

Table 3.3 summarizes the variables incorporated in the analyses throughout this study. Debt maturity exhibits a mean value of 13.0%, which implies that for the privately-held firms in the

sample, on average 13.0% of their outstanding debts expire in more than one year. For the 55.5% firm-years with long term debt, this fraction augments to on average 23.4%. In general, the debt maturity figures presented in this study for privately-held firms are lower than the 29.1% reported by García-Teruel et al. (2010) on Spanish listed firms.

Table 3.3 also presents the distribution of the test variable, which is the AQ measure from the Dechow and Dichev (2002) model as adjusted by McNichols (2002). The table shows a mean (median) of - 0.052 (- 0.042). Contrasting our AQ values with the ones reported in existing literature reveals two interesting observations about the AQ of the Belgian privately-held firms under study. Firstly, the AQ of the sampled privately-held firms is lower than that of the United States (US) listed firms in prior research. In effect, the absolute mean and median AQ values reported by Francis et al. (2005) on a set of US listed firms during the period 1970-2001 are approximately 0.044 and 0.031 respectively and thus lower than the absolute values found in this study. Since higher absolute values indicate lower AQ (see section 1.4.2), the AQ of Belgian privately-held firms is inclined to be lower. This is consistent with the finding from Leuz et al. (2003) that EQ tends to be better in Anglo-Saxon countries, and with the finding from Hope et al. (2013), Burgstahler et al. (2006) and Ball and Shivakumar (2005) that unlisted firms typically display lower EQ. Secondly, and more striking, it appears that the Belgian privately-held firms in this study do a worse job when it comes to financial reporting compared to Spanish SMEs in earlier work by García-Teruel et al. (2014a). In numbers, García-Teruel et al. (2014a) examine a dataset of Spanish SMEs over the period 1998 until 2005 and present for their sample mean and median AQ values of more or less -0.028 and -0.024 respectively.

The SMEs in our sample display a significantly lower AQ than their larger privately-held counterparts (not reported, $p<0.01$).

Overall, the privately-held firms in this research are profitable (6.6% return on average) and fairly healthy as only 14.1% of them are labeled as being in financial distress according to the

Altman (1983) framework[50]. To end, the privately-held firms in this sample are in general somewhat larger than the firms under scope in prior related work (e.g., Van Caneghem and Van Campenhout 2012, Heyman et al. 2008, Sogorb-Mira 2005). This is principally because along with SMEs also non-SMEs are considered in this study. Another factor that contributes to a larger size of the sampled firms is the choice to focus on full format financial statements.

[Insert Table 3.3 about here]

It can be demonstrated that the firm-year observations whose debt maturity is different from zero have on average a significantly higher AQ compared to the firm-year observations that finance entirely with short term debt (not reported t-test, $p<0.01$).

To explore the relationship between privately-held firms' AQ and their debt maturity further, we take a closer look at the mean debt maturity across the AQ quintiles (following García-Teruel et al. 2010). As Figure 3.1, Panel A illustrates, the firm-year observations with the best AQ (i.e., Q5) exhibit the highest debt maturity ratios. Even more striking and clearly portrayed in Panel B of Figure 3.1, debt maturity increases monotonously in function of AQ. Based on Panel A of Figure 3.1, the difference between Q1 and Q5 is further not only highly statistically significant (not reported, $p<0.01$), but also economically material, i.e., from Q1 to Q5, there is on average a 107.1% increase in debt maturity. Or stated differently, compared to the 20% firm-year observations with the lowest AQ (Q1), the 20% firm-year observations with the highest AQ (Q5) have a 1,060 basis points (10.6 percentage points) higher debt maturity on average. Bearing in mind the overall mean of debt maturity (13.0%), this effect is non-neglectable.

[Insert Figure 3.1 about here]

[50] With respect to financial health, the Z'-score for the sampled privately-held firms is on average 3.056 (not reported).

The correlation matrix provided in Table 3.4 reveals a positive Pearson correlation coefficient between AQ and debt maturity equal to 0.119 ($p<0.01$), which is consistent with the results of the bivariate analyses and *H1*. Further, Table 3.4 does not suggest multicollinearity problems.

[Insert Table 3.4 about here]

In conclusion, the results of these preliminary analyses reveal that the AQ of privately-held firms happens to be positively associated with these firms' debt maturity.

3.5.2 Regression results

3.5.2.1 Primary analyses

In this section, we estimate regression equations *(3.1)* and *(3.2)*, which both model the debt maturity of the sampled privately-held firms as a function of AQ, our variable of interest, and a set of control variables. As explained in section 3.3.4, to estimate these regression equations it is preferred to run Heckman selection models.

For both regression equations, the average marginal effects of both the first and second step are shown in Table 3.5.

[Insert Table 3.5 about here]

To start, the A Panel of Table 3.5 shows the results of estimating regression equation *(3.1)*. The test variable, AQ, clearly attains significance both in the first step and in the second step of the debt maturity selection model ($p<0.01$)[51]. This supports the idea underlying *H1* that AQ, i.e., our measure of FRQ, is able to explain a certain extent of variation in the debt maturity structure

[51] In an unreported analysis, the standard errors in Table 3.5, Panel A were bootstrapped to account for the fact that AQ and the inverse mills ratio are generated regressors. The applied bootstrapping procedure (500 random samples with replacement and clustering at the firm) did not alter the significance of AQ neither in the first stage (1% level) nor in the second stage (1% level).

of privately-held firms on top of some more traditional variables that are included in the model, such as size and asset tangibility. Further, in both steps, the direction of the AQ effect on debt maturity is positive. In particular, the findings in Panel A of Table 3.5 indicate that the chance of having long term debt (i.e., step 1) as well as the relative importance of long term debt conditional upon having long term debt (i.e., step 2) are increasing in AQ. In other words, compared to privately-held firms with lower AQ, privately-held firms with higher AQ tend to use long term debt more often, and if they do, the fraction of long term debt in total debt is also inclined to be higher. In numbers, the differential in terms of debt maturity between the 10^{th} and 90^{th} AQ percentile is estimated to be on average 0.08773 in the first step and 0.02350 in the second step[52]. All else equal, this implies that a firm in our sample without long term debt that would be able to increase its AQ from the 10^{th} to the 90^{th} AQ percentile increases its likelihood of having long term debt with on average 877.3 basis points (8.773 percentage points), while a firm in our sample with long term debt would be able to increase its debt maturity ratio with no less than 235.0 basis points (2.350 percentage points) on average for an equivalent improvement in AQ. In sum, even after controlling for other determinants of debt maturity, the effect of AQ turns out to be both econometrically significant and economically relevant. We interpret this as convincing evidence for our hypothesis that the FRQ of privately-held firms relates positively to these firms' debt maturity.

In Panel B of Table 3.5, the model in Panel A of Table 3.5 is augmented by AQ * SME as depicted in regression equation *(3.2)*. In line with the arguments provided in the development of *H2*, in Panel B of Table 3.5, we encounter a significantly larger AQ effect for SMEs than for non-SMEs. That is to say, both in the first step and the second step the effect of AQ * SME is

[52] This is computed by taking the absolute value of the average AQ marginal effect from respective step of the selection model which is documented in Table 3.5 and multiplying it with the interpercentile range between the 10^{th} and 90^{th} AQ percentile in the estimation sample (see Table 3.3).

positively significant ($p<0.01$)[53]. Regarding economic impact, the differential in debt maturity between the 10th and 90th AQ percentile increases for SMEs to 11.823 percentage points on average in the first step and to 4.305 percentage points on average in the second step.

Controlling for the differential role of AQ for SMEs and non-SMEs also refines our results in the A Panel of Table 3.5, since it appears that only for SMEs there exists a significant effect of AQ in the second step.

In all specifications, the inverse mills ratio is statistically significant at the 1% level. This confirms our LR test and highlights that, in our research setup, Heckman selection modelling is econometrically a more appropriate method than tobit models.

As concerns the significant control variables, the most important ones based on economic impact are asset tangibility and collateral[54]. In Table 3.5 there is a positive relationship between asset tangibility and debt maturity, denoting that, overall, for privately-held firms with more tangible assets, the proportion of long term debt in total debt is higher. This may point at maturity matching or matching the time it takes to settle liabilities with asset liquidity (Heyman et al. 2008, Scherr and Hulburt 2001), or alternatively, it may indicate that tangible assets are more easily collateralized[55] (García-Teruel et al. 2014a, Cole 2013, Van Caneghem and Van Campenhout 2012, Degryse et al. 2012, Sogorb-Mira 2005, Michaelas et al. 1999), which opens up the access to long term debt. In either case, the notion that collateral is an important facilitator

[53] This is also true when, in line with a definition of the NBB (National Bank of Belgium, 2016), small firms are defined as independent firms with less than hundred FTEs.

[54] The economic impact is assessed in line with the method explained in footnote 53.

[55] Compared to intangible assets, the value of tangible assets is more certain as there are active secondary markets to trade them. Likewise, higher asset tangibility values imply a greater liquidation value of the firm and thus a greater potential to provide collateral (Cole 2013, Van Caneghem and Van Campenhout 2012, Sogorb-Mira 2005).

in getting access to long term debt is confirmed by the positive coefficients on collateral in the first step.

3.5.2.2 Additional analyses

A potential drawback of the debt maturity measure that is used in the analyses throughout the previous sections of this paper is that it could be affected by commitments of outstanding loans that were contracted in the past. Therefore, in this section, we look into privately-held firms' ability to contract new long term debt as an alternative to studying privately-held firms' debt maturity directly. The idea is that this ability should be closely linked to debt maturity as it is, given a certain desired debt level, a necessary condition for attaining and maintaining a high debt maturity. To measure privately-held firms' ability to contract new long term debt, an indicator variable $Net\ increases$ was created taking a value of one for privately-held firms that managed to realize a net increase in their amount of long term debt in the considered year and a value of zero for all privately-held firms that did not manage to do so. Basically, this indicator variable identifies privately-held firms of which we can be sure that they have been raising new long term debt with their creditors in the considered year. The benefit of this alternative measure over the more traditional ratio measure used thus far is that it is somewhat more purified from past history[56].

Panels A and B of Table 3.6 replicate the models in Panels A and B of Table 3.5 respectively, but as the indicator variable for net increases in long term debt is used as dependent variable, probit models are applied.

[56] The alternative measure is not completely purified from past history since we cannot rule out that loan renegotiations have a certain impact.

[Insert Table 3.6 about here]

In Table 3.6, Panel A, we obtain a significantly positive effect of AQ ($p<0.01$). Also concerning economic impact, the AQ effect is non-neglectable. That is to say, for an average privately-held firm in an average year, an improvement from the 10^{th} to the 90^{th} AQ percentile, increases the firm's odds of realizing a net increase in long term debt with 3.616 percentage points. As such, these results imply that the positive association between the AQ of privately-held firms and these firms' debt maturity, which was established in Table 3.5, Panel A is unlikely to be exclusively driven by some debts under scrutiny that were contracted many years ago.

In Panel B of Table 6, it is shown that consistently with Panel B of Table 5, the AQ effect is larger for SMEs than for non-SMEs (AQ * SME > 0, $p<0.01$)[57]. Hence, also this effect is largely unaffected by the existence of old debts.

More than the primary analyses, the additional analyses enable to explore time effects. One time effect of particular interest is whether the recent financial crisis has impacted the effects of FRQ on the debt maturity structure of privately-held firms. Scanning the existing literature learns that the effects of FRQ may actually be stronger during and in the aftermath of the recent financial crisis. Francis et al. (2013) and Sadka (2011) for instance indicate that a crisis provokes a 'flight-to-information quality' amongst investors of listed firms. It is said that whereas during thriving economic conditions investors tend to disregard the risk stemming from mediocre information quality, a crisis makes them conscious of this risk that existed all along. As a result, concerned investors are inclined to withdraw money from firms whose information quality is perceived to be low and that are therefore believed to be more risky. To examine if the recent financial crisis has triggered a similar 'flight-to-information quality' amongst

[57] The similarities between the results of Table 3.6, Panel B and the results of step 2 in Table 3.5, Panel B confirm the idea that contracting new long term debt and debt maturity are closely related.

creditors of privately-held firms and more specifically to examine if the recent financial crisis has altered the AQ effects reported in this study, we repeat the additional analysis in Panel A of Table 3.6 and extend it with crisis effects. Given the findings from the primary analyses, we do this on two subsamples (i.e., SMEs and non-SMEs). Briefly, we drop the year dummies from the debt maturity model and use an indicator variable $Crisis$, taking a value of one for the crisis / post-crisis period (i.e., 2009-2014) and a value of zero for the pre-crisis period (i.e., 2004-2008), instead. We interact this indicator variable with our variable of interest, being AQ, to capture possibly differential effects of AQ in the crisis.

As illustrated in Panel C of Table 3.6, given the non-significance of the crisis indicator variable and the interaction of this variable with AQ in both subsamples, there is no support that the crisis has an effect on privately-held firms' debt maturity nor that the crisis has modified the effects of AQ on privately-held firms' debt maturity. We do find that the positive effect of AQ on SMEs' chances to contract new long term debt persisted during and in the aftermath of the crisis meaning that better reporting SMEs were able to raise new long term debt more often than worse reporting SMEs, both before and since the crisis. For larger privately-held firms, we find no longer a significant effect of AQ on their ability to collect new long term debt, consistent with the fact that these firms entail less fundamental risk.

3.5.2.3 Robustness tests

The aim of this section is twofold. We intend to rule out that endogeneity is driving our primary results in Table 3.5, and, we highlight the robustness of these results to the definition of debt maturity and to the measurement of AQ.

As described in García-Teruel et al. (2014a) and García-Teruel et al. (2010), the relationship between FRQ and debt maturity may be susceptible to endogeneity. Besides the information asymmetry framework that is provided in this study, there also exist theoretical arguments that

support the idea that debt and especially bank debt has an impact on FRQ. These endogeneity concerns are somewhat tempered by our use of lagged independent variables in all models (see section 3.3). However, to address these endogeneity concerns further, we conducted two supplementary analyses.

A first way to deal with potential endogeneity in the FRQ-debt maturity relationship is to perform a two-stage least-squares (2SLS) model where FRQ and debt maturity are endogenously determined. Consistent with García-Teruel et al. (2014a), in the first stage, we regress AQ on its innate determinants (i.e., size, length operating cycle, five-year standard deviation of sales, five-year standard deviation of cash flow from operations, percentage of years with negative earnings) (Dechow and Dichev 2002), the cost of debt (interest expenses / average financial debt), the Z'-score, and debt maturity. In the second stage, we then re-estimate the regressions in Table 3.5, Panels A and B, but for AQ we use the predicted values from the first stage. Of the results with this alternative AQ measure, only the average marginal effects for AQ and AQ * SME are reported in Panel A of Table 3.7. As can be seen, the 2SLS confirm the former results concerning AQ and AQ * SME and the conclusions we infer from that.

[Insert Table 3.7 about here]

A second approach to address endogeneity is to run Granger causality tests (Gujarati 2003). The rationale underlying Granger causality is that if a variable x Granger-causes a variable y, then the past values of x should contain information that helps to predict y above and beyond the information contained in the past values of y. Granger causality can therefore be tested by executing a regression of y on a number of lags of y (e.g., four) and a number of lags of x (e.g., four) and performing a Wald test on the coefficients of the lags of x. If the null hypothesis that all coefficients on the lags of x are jointly equal to zero can be rejected at the conventional confidence levels, then this points at Granger causality (Gujarati 2003, pp. 696-702). The results of Granger causality tests using various numbers of lags (not reported) confirm the 2SLS results.

AQ appears to Granger-cause debt maturity in that the past values of AQ contain information that helps to predict debt maturity above and beyond the information contained in the past values of debt maturity, while the opposite relationship is less significant.

As concerns the definition of debt maturity and the measurement of AQ, we performed a number of further analyses as well. The average marginal effects of the further analyses with respect to the definition of debt maturity can be found in Table 3.7, Panel B and the ones for the computation of AQ in Table 3.7, Panel C. Similarly to the A Panel, in the B and C Panels of Table 3.7 only the average marginal effects for AQ and AQ * SME are reported. Firstly, the results for AQ and AQ * SME in Panels A and B of Table 3.5 largely hold when debt maturity is defined as either (1) average debt with a time to maturity of more than five years to average total debt, (2) average debt with a time to maturity of more than five years to average debt with a time to maturity of more than one year, or (3) average debt with a time to maturity between one and five years to average debt with a time to maturity of no more than five years[58]. This implies that the positive association between AQ and debt maturity does not depend on the artificial cutoff that is employed to separate between short and long term debt but actually holds for a variety of cutoffs.

Secondly, it can be shown that the established association between AQ and debt maturity is robust to various specifications of the AQ model. Basically, we considered two alternative AQ models, i.e., the original Dechow and Dichev (2002) model and the Ball and Shivakumar (2006) model[59]. Both models are executed similarly as the Dechow and Dichev (2002) model as altered

[58] The only exception is the second step of the model with the third alternative definition of debt maturity.

[59] The original Dechow and Dichev (2002) model builds on the following regression equation:

$$\Delta WC_{i,t} = \gamma_0 + \gamma_1 * CFO_{i,t-1} + \gamma_2 * CFO_{i,t} + \gamma_3 * CFO_{i,t+1} + \varepsilon_{i,t} \quad (3.5)$$

All variables are defined consistently with regression equation *(1.1)* in section 1.4.2.

The Ball and Shivakumar (2006) model is obtained by extending the original Dechow and Dichev (2002) model with three variables:

by McNichols (2002) that was used in the primary and additional analyses. That is, the models are first run cross-sectionally for each industry-year class separately and the residuals from these regressions are stored, whereafter, a company- and year-specific AQ measure is calculated as minus one times the standard deviation of the residuals in year *t* and the four preceding years. It turns out that the results for AQ and AQ * SME documented in Table 3.5, Panels A and B are qualitatively similar when AQ is measured using the original Dechow and Dichev (2002) model and the Ball and Shivakumar (2006) model.

The larger the absolute values of the residuals that are encountered when running the AQ model, the greater the magnitude of the accrual estimation errors is likely to be. Hence, and as argued by Dechow and Dichev (2002), the absolute values of the residuals can be considered as an alternative measure of AQ[60]. Therefore, we also computed AQ as the absolute values of the residuals for each of the three AQ estimation models considered. For the sake of interpretation, we multiplied the absolute values of the residuals by minus one so that higher values indicate higher AQ. For all three models, substituting the standard deviations of residuals by the absolute values of the residuals produces results for AQ that are equivalent to the ones reported in Table 3.5, Panel A. The results on the association between AQ * SME and debt maturity from Table 3.5, Panel B turns however insignificant when working with absolute residuals.

$\Delta WC_{i,t} = \omega_0 + \omega_1 * CFO_{i,t-1} + \omega_2 * CFO_{i,t} + \omega_3 * CFO_{i,t+1} + \omega_4 * \Delta CFO_{i,t} + \omega_5 * D + \omega_6 * D * \Delta CFO_{i,t} + \varepsilon_{i,t}$ *(3.6)*

Where $\Delta CFO_{i,t}$ is the change in the cash flows from operations from year *t-1* to year *t* deflated by average total assets of year t and D is an indicator variable which takes a value of one if $\Delta CFO_{i,t}$ is negative and zero otherwise. The remaining variables are defined consistently throughout the paper.

[60] In the primary and additional analyses, standard deviations are preferred instead of absolute values of the residuals as a measure of AQ since sizeable residuals do not form a serious threat as long as they are consistently large (Francis et al. 2005). Moreover, there may be sound reasons for systematically big residuals (e.g., industry-related factors). In those cases, information asymmetry remains limited.

Finally, we aggregated the AQ measures from the three applied models into one summary metric by computing the arithmetic average of the normalized values from the three underlying models (Chen et al. 2011 amongst others). As the aggregation is done for the standard deviations of residuals and the absolute values of the residuals separately, this results into two distinct aggregated AQ measures. The benefit from working with these aggregated AQ measures is that this may tackle potential measurement error in the underlying components (Chen et al. 2011). As can be seen from the respective line in Table 3.7, for the standard deviations of residuals, this does not change the results for AQ and AQ * SME reported in Table 3.5, Panels A and B. In line with the results of the individual absolute residuals measures, the aggregated absolute residuals measure confirms the results for AQ from Table 3.5, Panel A, but does not support the results for AQ * SME from Table 3.5, Panel B.

In general, the AQ results reported in this study are unlikely to be provoked by endogeneity and prove to be robust to several alternative specifications of both the debt maturity measure and the AQ estimation model.

3.6 Conclusion

This study uses a detailed dataset with financial statement information of 35,017 firm-year observations from Belgian limited liability privately-held firms over the 2004-2014 period to examine the relationship between the FRQ of privately-held firms and these firms' debt maturity structure. Using AQ as FRQ measure, the findings from this study are generally consistent with a double effect of privately-held firms' FRQ on their debt maturity structure. Firstly, the findings indicate that overall, for privately-held firms, the likelihood of having long term debt is increasing in AQ. Secondly, the findings indicate that for those privately-held firms that have long term debt outstanding, the percentage of debt that is long term is positively associated with AQ. On top of that, the findings from an additional analysis demonstrate that

overall, privately-held firms' AQ associates positively with the likelihood of achieving a net increase in long term debt.

Furthermore, consistent with fundamental risk mediating the relationship between FRQ and debt maturity, we report evidence of differences between SMEs and their larger privately-held counterparts.

This study adds to the literature in different ways. Firstly, this study demonstrates that even in a context of privately-held firms which is less conducive for high FRQ (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005), FRQ happens to be an important factor in explaining privately-held firms' debt maturity. More in general, this suggests that financial statements of privately-held firms, if available, are in fact used by market participants. As such, the findings disprove the argument that there would be less market demand for high-quality information by privately-held firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). We consider this as an important extension to the scarce empirical research on the reporting practices of privately-held firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005). Furthermore, while prior related studies (e.g., García-Teruel et al. 2010) use one-step regression procedures, we preferred to run Heckman selection models (Heckman 1979) that regard the debt maturity of a privately-held firm as the outcome of two separate incidents, being the presence of long term debt in the firm's financial structure and the relative use of long term debt conditional upon having it. Our empirical results show that Heckman selection models are desired.

Secondly, to the best of our knowledge, this study is the first to show that the FRQ effect on debt maturity is mediated by fundamental risk. More specifically, the findings from this study demonstrate that there are differences between SMEs and larger privately-held entities with respect to the effect of FRQ on debt maturity.

Thirdly, it is documented that FRQ is an important determinant in a range of SME financing decisions including cost of debt (Vander Bauwhede et al. 2015), bank debt (García-Teruel et al. 2014a), supplier financing (García-Teruel et al. 2014a), and overall leverage (Van Caneghem and Van Campenhout 2012). This study adds debt maturity to this list.

The value of our research is not only situated in its contributions to the literature, we believe our findings also have implications for practitioners. Managers of privately-held firms can learn from the results that being more devoted to high-quality financial reporting may be worthwhile since it may improve the access to long term debt. This is important, since managers that improve their access to long term debt may find it possible to pursue more investment opportunities. Low-quality financial reporting on the contrary, impedes privately-held firms' financing with long term debt. The takeaway for managers is that, to the extent that opportunistic earnings management reduces AQ, managers that engage in opportunistic earnings management run the risk of being rationed out from long term debt by creditors.

Besides to managers of privately-held firms, the findings from this article are important for regulators for they suggest that the information in privately-held firms' financial statements is relevant for market participants. More specifically, they point towards an important economic benefit of high-quality financial reporting for privately-held firms overall and for SMEs more in particular, that is the improved access to long term debt. As such, they feed the debate that is currently held at the EU level concerning the reporting duty of small businesses. The European regulators may want to bear our results in mind when setting new standards that tend to reduce financial reporting requirements for SMEs. More in general, the insights provided in this study may also prove to be helpful for the European regulators when setting up programs aimed at enhancing the external financing possibilities of privately-held firms.

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Tables and figure

Table 3.1: Sampled firm-year observations (2004-2014)

CRITERIA	DROP	SAMPLE
Belgian privately-held firms with limited liability		177,566
- restructuring activities	-43,623	
		133,943
- fiscal motives	-9,498	
		124,445
- short or long fiscal year	-3,447	
		120,998
- no non-missing data over eight consecutive years for AQ	-83,802	
		37,196
- no debt	-31	
		37,165
- missing values	-2,148	
Final debt maturity sample		*35,017*

Table 3.2: Sample break-down by size, age and industry

Panel A: BY SIZE (EU SME definition)			**Panel B**: BY AGE (in years)		
	#	%		#	%
Micro	1,744	5.0%	> 6, <= 11	2,717	7.8%
Small	10,584	30.2%	> 11, <= 16	4,214	12.0%
Medium	8,996	25.7%	> 16, <= 21	5,464	15.6%
Non-SMEs	13,693	39.1%	> 21, <= 26	5,371	15.3%
			> 26	17,251	49.3%
Total	35,017	100.0%	Total	35,017	100.0%

Panel C: BY INDUSTRY (Nace-BEL)		
	#	%
Agriculture, fishing, natural resources	353	1.0%
Manufacturing	11,183	31.9%
Construction	2,757	7.9%
Retailing	11,468	32.7%
Hotels and restaurants	310	1.0%
Transport and communication	3,924	11.2%
Services to companies	5,022	14.3%
Total	35,017	100.0%

Table 3.3: Descriptive statistics

DEPENDENT VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
Debt maturity	0.130	0.215	0.000	0.007	0.440	0.440
55.5% with long term debt	0.234	0.242	0.007	0.151	0.608	0.601
TEST VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
AQ	-0.052	0.038	-0.100	-0.042	-0.016	0.084
55.5% with long term debt	-0.046	0.035	-0.089	-0.037	-0.014	0.075
CONTROL VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90 - p10
Size	9.320	1.483	6.094	9.189	11.226	5.132
Age	3.291	0.572	1.946	3.258	4.043	2.097
Asset tangibility	0.183	0.199	0.000	0.113	0.462	0.462
Collateral	0.243	0.429	0.000	0.000	1.000	1.000
Profitability	0.066	0.107	-0.249	0.047	0.196	0.445
Grey	0.390	0.488	0.000	0.000	1.000	1.000
Distress	0.141	0.348	0.000	0.000	1.000	1.000
Past growth	0.042	0.104	-0.205	0.034	0.174	0.379
Growth prospects	0.008	0.025	0.000	0.000	0.018	0.018
Debt	0.550	0.245	0.036	0.571	0.852	0.816
Industry median	0.017	0.028	0.000	0.007	0.043	0.043

N = 35,017. *Debt maturity* = average debt with time to maturity > 1 year / average total debt, *AQ*: see section 1.4.2 for exact definition, *Size* = ln (total assets), *Age* = ln (age in years), *Asset tangibility* = net property, plant and equipment / total assets, *Collateral* = dummy variable taking 1 if some of the debt is secured - 0 otherwise, *Profitability* = operating income / total assets, *Grey* = dummy variable taking 1 if 1.23 < Z'-score < 2.90 - 0 otherwise, *Distress* = dummy variable taking 1 if Z'-score < 1.23 - 0 otherwise, *Past growth* = geometric average percentage asset growth over previous three years, *Growth prospects* = intangible assets / total assets, *Debt* = average total debt / average total assets, *Industry median* = industry- and year-specific median of debt maturity.

Table 3.4: Correlation matrix

VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Debt maturity	1.000												
(2) AQ	0.119***	1.000											
(3) Size	0.227***	0.159***	1.000										
(4) Age	0.056***	0.102***	0.168***	1.000									
(5) Asset tangibility	0.426***	0.099***	0.044***	0.072***	1.000								
(6) Collateral	0.194***	0.125***	0.003	0.032***	0.161***	1.000							
(7) Profitability	-0.146***	0.004	-0.104***	-0.065***	-0.105***	-0.090***	1.000						
(8) Grey	0.061***	0.036***	0.044***	0.033***	0.067***	0.120***	-0.192***	1.000					
(9) Distress	0.379***	-0.020***	0.214***	-0.011**	0.217***	0.015***	-0.288***	-0.324***	1.000				
(10) Past growth	0.040***	0.035***	0.140***	-0.053***	-0.028***	0.037***	0.125***	-0.018***	-0.005	1.000			
(11) Growth prospects	0.015***	-0.044***	0.075***	-0.033***	-0.024***	-0.007	-0.043***	0.041***	0.051***	0.017***	1.000		
(12) Bank debt	0.189***	-0.030***	-0.006	-0.086***	0.070***	0.186***	-0.100***	0.137***	0.274***	-0.002	0.048***	1.000	
(13) Industry median	0.102***	0.008	0.062***	0.053***	0.146***	0.108***	-0.060***	0.038***	0.065***	-0.007	0.026***	0.005	1.000

Bivariate Pearson correlation coefficients. N = 35,017. *Debt maturity* = average debt with time to maturity > 1 year / average total debt, *AQ*: see section 1.4.2 for exact definition, *Size* = ln (total assets), *Age* = ln (age in years), *Asset tangibility* = net property, plant and equipment / total assets, *Collateral* = dummy variable taking 1 if some of the debt is secured - 0 otherwise, *Profitability* = operating income / total assets, *Grey* = dummy variable taking 1 if 1.23 < Z'-score < 2.90 - 0 otherwise, *Distress* = dummy variable taking 1 if Z'-score < 1.23 - 0 otherwise, *Past growth* = geometric average percentage asset growth over previous three years, *Growth prospects* = intangible assets / total assets, *Debt* = average total debt / average total assets, *Industry median* = industry- and year-specific median of debt maturity. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.

Table 3.5: Primary analyses

	Panel A				Panel B			
	PROBIT		OLS		PROBIT		OLS	
	ME	(p-value)	ME	(p-value)	ME	(p-value)	ME	(p-value)
AQ	*1.046***	*(0.000)*	*0.317***	*(0.001)*	*0.867***	*(0.000)*	*0.050*	*(0.739)*
*AQ * SME*					*0.543***	*(0.008)*	*0.530***	*(0.003)*
SME					*-0.067***	*(0.000)*	*-0.013*	*(0.164)*
Size	0.039***	(0.000)	0.028***	(0.000)				
Age	0.015*	(0.065)	-0.002	(0.740)	0.022***	(0.007)	0.003	(0.616)
Asset tangibility	0.452***	(0.000)	0.432***	(0.000)	0.468***	(0.000)	0.419***	(0.000)
Collateral	0.396***	(0.000)	0.042***	(0.009)	0.392***	(0.000)	0.016	(0.311)
Profitability	-0.197***	(0.000)	0.063**	(0.044)	-0.194***	(0.000)	0.090***	(0.004)
Grey	0.098***	(0.000)	0.082***	(0.000)	0.103***	(0.000)	0.081***	(0.000)
Distress	0.090***	(0.000)	0.256***	(0.000)	0.110***	(0.000)	0.273***	(0.000)
Past growth	0.112***	(0.000)	0.072***	(0.002)	0.180***	(0.000)	0.111***	(0.000)
Growth prospects	0.410***	(0.009)	-0.098	(0.370)	0.469***	(0.003)	-0.084	(0.459)
Debt	0.308***	(0.000)	0.023	(0.225)	0.301***	(0.000)	0.005	(0.814)
Industry median	0.227	(0.201)	0.022	(0.858)	0.299	(0.117)	0.041	(0.741)

Table 3.5: Primary analyses (cont'd)

	Panel A				**Panel B**			
	PROBIT		OLS		PROBIT		OLS	
	ME	(p-value)	ME	(p-value)	ME	(p-value)	ME	(p-value)
2005	0.006	(0.342)	0.003	(0.523)	0.012*	(0.087)	0.006	(0.242)
2006	-0.000	(0.962)	0.002	(0.735)	0.006	(0.507)	0.005	(0.422)
2007	-0.002	(0.840)	0.010	(0.172)	0.006	(0.561)	0.016**	(0.041)
2008	-0.009	(0.402)	0.012	(0.130)	-0.001	(0.894)	0.018**	(0.032)
2009	-0.012	(0.297)	0.018**	(0.033)	-0.009	(0.424)	0.021**	(0.013)
2010	-0.028**	(0.015)	0.017**	(0.042)	-0.026**	(0.024)	0.021**	(0.013)
2011	-0.027**	(0.018)	0.020**	(0.015)	-0.021*	(0.061)	0.027***	(0.001)
2012	-0.029**	(0.011)	0.023***	(0.007)	-0.021*	(0.072)	0.032***	(0.000)
2013	-0.039***	(0.001)	0.021**	(0.013)	-0.030***	(0.008)	0.031***	(0.000)
2014	-0.044***	(0.000)	0.021**	(0.013)	-0.036***	(0.002)	0.031***	(0.000)
Inverse mills ratio	*N/A*		*0.105*	*(0.000)*	*N/A*		*0.075*	*(0.003)*
Wald Chi²-stat	3125.3***	(0.000)			3012.6***	(0.000)		
F-stat			95.4***	(0.000)			88.4***	(0.000)
N	35,017		19,441		35,017		19,441	
McFadden pseudo R^2	0.261				0.258			
R^2			0.319				0.310	

Average marginal effects (ME) from two-step Heckman selection models. *Dependent variable in the probit (step 1), Debt maturity* = dummy variable taking 1 if some of the debt is long term - 0 otherwise, *Dependent variable in the OLS (step 2), Debt maturity* = average debt with time to maturity > 1 year / average total debt, *AQ*: see section 1.4.2 for exact definition, *SME* = dummy variable taking 1 if the SME definition of the European Commission is met - 0 otherwise (European Commission 2014), *Size* = ln (total assets), *Age* = ln (age in years), *Asset tangibility* = net property, plant and equipment / total assets, *Collateral* = dummy variable taking 1 if some of the debt is secured - 0 otherwise, *Profitability* = operating income / total assets, *Grey* = dummy variable taking 1 if 1.23 < Z'-score < 2.90 - 0 otherwise, *Distress* = dummy variable taking 1 if Z'-score < 1.23 - 0 otherwise, *Past growth* = geometric average percentage asset growth over previous three years, *Growth prospects* = intangible assets / total assets, *Debt* = average total debt / average total assets, *Industry median* = industry- and year-specific median of debt maturity. Standard errors are in both steps clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Table 3.6: Additional analyses

	Panel A		Panel B		Panel C			
					SME		NON-SME	
	ME	(p-value)	ME	(p-value)	ME	(p-value)	ME	(p-value)
AQ	*0.431****	*(0.000)*	*0.213**	*(0.051)*	*0.424****	*(0.001)*	*0.213*	*(0.202)*
*AQ * SME*			*0.540****	*(0.000)*				
SME			*0.005*	*(0.556)*				
*AQ * Crisis*					*0.044*	*(0.766)*	*0.095*	*(0.632)*
Crisis					*-0.014*	*(0.137)*	*-0.013*	*(0.289)*
Size	0.019***	(0.000)			0.023***	(0.000)	0.016***	(0.000)
Age	0.018***	(0.000)	0.023***	(0.000)	0.031***	(0.000)	-0.004	(0.473)
Asset tangibility	0.111***	(0.000)	0.112***	(0.000)	0.141***	(0.000)	0.027	(0.151)
Collateral	0.075***	(0.000)	0.071***	(0.000)	0.071***	(0.000)	0.081***	(0.000)
Profitability	-0.100***	(0.000)	-0.095***	(0.000)	-0.098***	(0.000)	-0.080*	(0.063)
Grey	0.038***	(0.000)	0.044***	(0.000)	0.025***	(0.000)	0.057***	(0.000)
Distress	0.060***	(0.000)	0.078***	(0.000)	0.034***	(0.001)	0.076***	(0.000)
Past growth	0.049**	(0.021)	0.086***	(0.000)	0.029	(0.214)	0.058*	(0.082)
Growth prospects	-0.016	(0.861)	0.023	(0.806)	-0.112	(0.302)	0.098	(0.397)
Debt	0.114***	(0.000)	0.110***	(0.000)	0.120***	(0.000)	0.117***	(0.000)
Industry median	0.101	(0.312)	0.122	(0.228)	0.125	(0.127)	0.108	(0.366)

Table 3.6: Additional analyses (cont'd)

	Panel A		**Panel B**		**Panel C**			
					SME		NON-SME	
	ME	(p-value)	ME	(p-value)	ME	(p-value)	ME	(p-value)
2005	0.005	(0.635)	0.008	(0.469)	N/A		N/A	
2006	0.008	(0.448)	0.011	(0.323)	N/A		N/A	
2007	0.007	(0.560)	0.011	(0.346)	N/A		N/A	
2008	0.011	(0.323)	0.015	(0.176)	N/A		N/A	
2009	-0.008	(0.478)	-0.006	(0.599)	N/A		N/A	
2010	-0.022**	(0.036)	-0.021**	(0.049)	N/A		N/A	
2011	0.004	(0.700)	0.007	(0.475)	N/A		N/A	
2012	-0.002	(0.823)	0.002	(0.822)	N/A		N/A	
2013	-0.014	(0.163)	-0.010	(0.348)	N/A		N/A	
2014	-0.013	(0.211)	-0.008	(0.410)	N/A		N/A	
Wald Chi²-stat	1129.3***	(0.000)	1057.8***	(0.000)	1398.5***	(0.000)	487.3***	(0.000)
N	35,017		35,017		21,324		13,693	
McFadden pseudo R^2	0.059		0.055		0.076		0.037	

Average marginal effects (ME) from probit models. *Dependent variable, Net increases* = dummy variable taking 1 if there is a net increase in long term debt - 0 otherwise, *AQ*: see section 1.4.2 for exact definition, *SME* = dummy variable taking 1 if the SME definition of the European Commission is met - 0 otherwise (European Commission 2014), *Crisis* = dummy variable taking 1 in the crisis and post-crisis period (i.e., 2009-2014) - 0 otherwise, *Size* = ln (total assets), *Age* = ln (age in years), *Asset tangibility* = net property, plant and equipment / total assets, *Collateral* = dummy variable taking 1 if some of the debt is secured - 0 otherwise, *Profitability* = operating income / total assets, *Grey* = dummy variable taking 1 if 1.23 < Z'-score < 2.90 - 0 otherwise, *Distress* = dummy variable taking 1 if Z'-score < 1.23 - 0 otherwise, *Past growth* = geometric average percentage asset growth over previous three years, *Growth prospects* = intangible assets / total assets, *Debt* = average total debt / average total assets, *Industry median* = industry- and year-specific median of debt maturity. Standard errors are clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Table 3.7: Summary table robustness tests

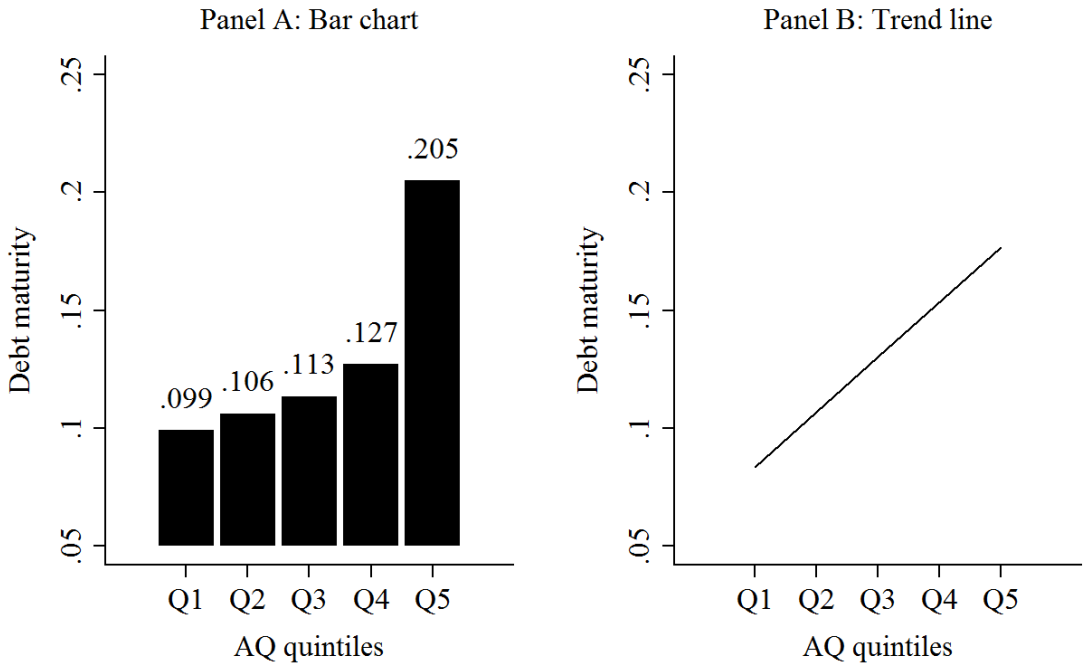
	PROBIT		OLS		PROBIT		OLS	
	ME	(p)	ME	(p)	ME	(p)	ME	(p)
Panel A: ALTERNATIVE ESTIMATION METHOD								
2SLS (N = 24,324 firm-years and 18,366 firm-years)								
AQ	5.683	(0.000)	7.912	(0.000)	3.874	(0.000)	5.786	(0.000)
AQ * SME					3.538	(0.000)	4.297	(0.000)
Panel B: ALTERNATIVE DEPENDENT VARIABLE DEFINITION								
Average debt > 5 years / average total debt (N = 35,017 firm-years and 9,192 firm-years) [a]								
AQ	1.011	(0.000)	1.424	(0.000)	0.717	(0.000)	0.453	(0.033)
AQ * SME					0.814	(0.000)	1.522	(0.000)
Average debt > 5 years / average debt > 1 year (N = 19,441 firm-years and 9,192 firm-years) [a]								
AQ	1.020	(0.000)	2.403	(0.000)	0.609	(0.016)	1.228	(0.000)
AQ * SME					1.017	(0.002)	3.216	(0.000)
Average debt >1 year and ≤ 5 years / average debt ≤ 5 years (N = 35,016 firm-years and 18,475 firm-years) [a]								
AQ	1.031	(0.000)	0.089	(0.293)	0.889	(0.000)	-0.020	(0.880)
AQ * SME					0.436	(0.034)	0.251	(0.099)

Table 3.7: Summary table robustness tests (cont'd)

	PROBIT		OLS		PROBIT		OLS	
	ME	(p)	ME	(p)	ME	(p)	ME	(p)
Panel C: ALTERNATIVE TEST VARIABLE SPECIFICATION								
St dev								
AQ model Dechow and Dichev (2002) (N = 35,017 firm-years and 19,441 firm-years)								
AQ	1.026	(0.000)	0.313	(0.001)	0.828	(0.000)	0.087	(0.551)
AQ * SME					0.573	(0.004)	0.464	(0.008)
AQ model Ball and Shivakumar (2006) (N = 35,017 firm-years and 19,441 firm-years)								
AQ	1.045	(0.000)	0.322	(0.001)	0.837	(0.000)	0.089	(0.547)
AQ * SME					0.590	(0.004)	0.477	(0.007)
Aggregated AQ measure (N = 35,017 firm-years and 19,441 firm-years)								
AQ	0.045	(0.000)	0.014	(0.001)	0.036	(0.000)	0.003	(0.602)
AQ * SME					0.025	(0.005)	0.021	(0.005)
Absolute residuals								
AQ model Dechow and Dichev (2002) and McNichols (2002) (N = 35,017 firm-years and 19,441 firm-years)								
AQ	0.547	(0.000)	0.276	(0.000)	0.561	(0.000)	0.197	(0.021)
AQ * SME					0.131	(0.289)	0.163	(0.102)
AQ model Dechow and Dichev (2002) (N = 35,017 firm-years and 19,441 firm-years)								
AQ	0.533	(0.000)	0.280	(0.000)	0.545	(0.000)	0.196	(0.017)
AQ * SME					0.136	(0.266)	0.176	(0.071)
AQ model Ball and Shivakumar (2006) (N = 35,017 firm-years and 19,441 firm-years)								
AQ	0.539	(0.000)	0.300	(0.000)	0.564	(0.000)	0.228	(0.006)
AQ * SME					0.114	(0.350)	0.158	(0.102)
Aggregated AQ measure 2 (N = 35,017 firm-years and 19,441 firm-years)								
AQ	0.036	(0.000)	0.019	(0.000)	0.037	(0.000)	0.014	(0.012)
AQ * SME					0.009	(0.289)	0.011	(0.087)

Average marginal effects for AQ and AQ * SME from two-step Heckman selection models. Standard errors are in both steps clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values (p) are reported between brackets.
[a] Industry dummies were used instead of the industry median.

Figure 3.1: Mean bank debt maturity by AQ quintiles



Appendix 3.1

Appendix 3.1: Heckman selection with exclusion restriction

	PROBIT		OLS	
	ME	(p-value)	ME	(p-value)
AQ	*0.793****	*(0.000)*	*0.264****	*(0.006)*
Bank debt (exclusion restriction)	0.219***	(0.000)	N/A	
Size	0.031***	(0.000)	0.025***	(0.000)
Age	0.009	(0.239)	-0.003	(0.617)
Asset tangibility	0.396***	(0.000)	0.411***	(0.000)
Collateral	0.238***	(0.000)	0.019**	(0.021)
Profitability	-0.122***	(0.001)	0.078***	(0.008)
Grey	0.085***	(0.000)	0.076***	(0.000)
Distress	0.094***	(0.000)	0.252***	(0.000)
Past growth	0.088***	(0.003)	0.069***	(0.002)
Growth prospects	0.394***	(0.008)	-0.130	(0.229)
Debt	0.232***	(0.000)	0.004	(0.807)
Industry median	0.170	(0.337)	0.011	(0.927)

Appendix 3.1: Heckman selection with exclusion restriction (cont'd)

	PROBIT		OLS	
	ME	(p-value)	ME	(p-value)
2005	0.011*	(0.100)	0.003	(0.531)
2006	0.009	(0.270)	0.002	(0.717)
2007	0.008	(0.426)	0.011	(0.153)
2008	0.002	(0.813)	0.013	(0.102)
2009	0.004	(0.749)	0.018**	(0.025)
2010	-0.008	(0.471)	0.019**	(0.019)
2011	-0.005	(0.637)	0.023***	(0.005)
2012	-0.007	(0.541)	0.025***	(0.002)
2013	-0.013	(0.245)	0.024***	(0.003)
2014	-0.015	(0.163)	0.025***	(0.003)
Inverse mills ratio	*N/A*		*0.074*	*(0.000)*
Wald Chi²-stat	3647.6***	(0.000)		
F-stat			93.0***	(0.000)
N	35,017		19,441	
McFadden pseudo R^2	0.306			
R^2			0.321	

Appendix 3.1: Heckman selection with exclusion restriction (cont'd)

Average marginal effects (ME) from two-step Heckman selection models. *Dependent variable in the probit (step 1), Debt maturity* = dummy variable taking 1 if some of the debt is long term - 0 otherwise, *Dependent variable in the OLS (step 2), Debt maturity* = average debt with time to maturity > 1 year / average total debt, *AQ*: see section 1.4.2 for exact definition, *Bank debt (exclusion restriction)* = dummy variable taking 1 if there is bank debt - 0 otherwise, *SME* = dummy variable taking 1 if the SME definition of the European Commission is met - 0 otherwise (European Commission 2014), *Size* = ln (total assets), *Age* = ln (age in years), *Asset tangibility* = net property, plant and equipment / total assets, *Collateral* = dummy variable taking 1 if some of the debt is secured - 0 otherwise, *Profitability* = operating income / total assets, *Grey* = dummy variable taking 1 if 1.23 < Z'-score < 2.90 - 0 otherwise, *Distress* = dummy variable taking 1 if Z'-score < 1.23 - 0 otherwise, *Past growth* = geometric average percentage asset growth over previous three years, *Growth prospects* = intangible assets / total assets, *Debt* = average total debt / average total assets, *Industry median* = industry- and year-specific median of debt maturity. Standard errors are in both steps clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

CHAPTER 4:

HOW DOES SMES' FINANCIAL REPORTING QUALITY AFFECT THEIR USE OF FINANCIAL LEASING AS A FINANCING ALTERNATIVE? ‡

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‡ This chapter is joined work with Heidi Vander Bauwhede en Philippe Van Cauwenberge and has benefited from useful comments at a 2016 Research Seminar at Ghent University and the 2016 Corporate Finance Day Meeting.

Abstract

This study examines whether and to what extent FRQ affects SMEs' reliance on financial leasing. Exploiting a detailed dataset (18,538 firm-year observations) on the financial leases of Belgian SMEs over the 2004-2014 period and using AQ as FRQ measure, our findings are twofold. Firstly, we demonstrate that the FRQ of SMEs is generally positively associated with their use of financial leasing in that SMEs with relatively higher FRQ finance on average a relatively larger fraction of their asset base with financial leases. This is in line with the idea that higher FRQ diminishes the information asymmetry between the SME and the lessor. Secondly, we show that the share of financial leasing in the sum of financial leasing and regular long term bank debt increases as FRQ decreases, which implies that for SMEs with lower FRQ, financial leasing becomes an increasingly important financing alternative. This is consistent with the notion that, in comparison to banks, lessors are willing to provide more credit to SMEs that exhibit lower FRQ because compared to banks, lessors hold a superior claim on the leased asset and are as such superiorly protected against borrower failure.

Keywords FRQ - Leasing - SMEs - Bank debt

JEL classifications G21 - G32 - M41

4.1 Introduction

Scanning the prior literature in the domain of FRQ learns that there is a growing body of empirical research documenting that lower FRQ has negative consequences regarding a firm's financing practices as it implies larger information asymmetry and therefore more risk. The bulk of these studies looks into the FRQ of public firms listed in the US stock markets (e.g., Hasan et al. 2012, Bharath et al. 2008, Francis et al. 2005, Francis et al. 2004). In sum, they provide evidence consistent with (1) lower FRQ increasing the cost of both equity financing and debt financing (Hasan et al. 2012, Bharath et al. 2008, Francis et al. 2005, Francis et al. 2004), (2) lower FRQ shortening loan maturities (Hasan et al. 2012, Bharath et al. 2008), and (3) lower FRQ increasing the likelihood of collateral requirements and debt covenants (Hasan et al. 2012, Bharath et al. 2008).

More recently, however, the scope of this line of research has been widened to also consider the FRQ of firms listed outside the US (e.g., Spanish listed firms in García-Teruel et al. 2010) and of smaller privately-held businesses (e.g., SMEs in Van Caneghem and Van Campenhout 2012). Particularly, the FRQ research employing archival data on SMEs has been prospering, with work as for instance Vander Bauwhede et al. (2015), García-Teruel et al. (2014a), García-Teruel et al. (2014b), and Van Caneghem and Van Campenhout (2012). In line with the studies on listed firms, these studies confirm the notion that SMEs with lower FRQ put their creditors more at risk, which in turn negatively affects their debt financing. Vander Bauwhede et al. (2015) for example, investigate for a sample of SMEs the cost of debt implications of lower FRQ and find that SMEs with lower FRQ have on average a higher cost of debt as compared to their better reporting counterparts. García-Teruel et al. (2014a), García-Teruel et al. (2014b) and Van Caneghem and

Van Campenhout (2012) all examine the link between SMEs' FRQ and the availability of debt financing and report that lower FRQ induces more restricted access to debt financing in general (Van Caneghem and Van Campenhout 2012) and to the two most important external financing sources for SMEs, being bank debt (García-Teruel et al. 2014a, Van Caneghem and Van Campenhout 2012) and supplier debt (García-Teruel et al. 2014b). Summarizing these SME studies, one could postulate that lower FRQ causes credit constraints on the part of SMEs with low-quality financial reports, viz. it restraints their access to bank and supplier debt, and, it is also likely to raise the price they pay for their external funds.

Given the results of Chen et al. (2011) and Biddle et al. (2009), the financial constraintness of firms with lower FRQ could cause these firms to invest less than optimal. Underinvestment by SMEs is however a worrying issue in today's world where it is a stylized fact that SMEs are of great importance for crucial economic parameters including employment, innovation and growth (Vermoesen et al. 2013, Van Caneghem and Van Campenhout 2012, European Commission 2014). To address their difficulties in finding sufficient amounts of external financing for investing, SMEs with lower FRQ have to look for other, sometimes more creative, financing sources. There are of course several options that can be combined with one another. These options go from factoring and using bank's overdraft facility to financing from the 3Fs (i.e., Friends, Fools and Family) and government support, but perhaps one of the most commonly used and promising ones is financial leasing. Leaseurope (2015) for instance confirms that financial leasing is thriving given its ability to foster investment. Despite the fact that financial leasing has significant potential for SMEs, to the best of our knowledge we are not aware of any academic work thus far linking SMEs' FRQ with the presence of financial leasing in their financial structure.

This paper further extends the current state of the literature by (1) considering financial leasing as an alternative method of financing for SMEs, (2) by examining the impact of FRQ on SMEs' use of financial leasing, and by (3) exploring how SMEs' FRQ affects the mix of financial leasing and long term bank debt.

This study exploits a detailed dataset with 18,538 financial statements from 4,290 Belgian SMEs over the years 2004 until 2014 and employs AQ as FRQ measure to examine the relationship between SMEs' FRQ and financial leasing. The main findings are twofold. Firstly, they demonstrate that, on average, SMEs with higher FRQ are expected to entail less information asymmetry and accordingly are able to finance their asset base to a larger extent with financial leasing as opposed to SMEs with lower FRQ. Secondly, for the firm-year observations with financial leasing and/or long term bank debt on their beginning and/or ending balance sheet, the findings show that as SMEs' FRQ falls, financial leasing gains importance over long term bank debt and becomes thus an increasingly important financing alternative. The latter is consistent with the fact that in the Belgian legal system lessors hold a superior claim on the leased asset, which permits them to extend more credit in conditions with low FRQ than banks. In an additional analysis it is then also documented that financial leasing is positively associated with the investments of SMEs with low FRQ, which may suggest that obtaining financial leasing can boost these investments.

This study contributes to various strands of literature. Firstly, even though the popularity of leasing has grown over the last couple of years (Belgian Leasing Association 2015, Leaseurope 2015), to the best of our knowledge, this study is the first to look at financial leasing in relation to FRQ. It further complements the study by Beatty et al. (2010) that links the FRQ of US firms to their use of operating leases and as such adds to the literature that links the FRQ of firms with their financing.

Secondly, this study provides new multifaceted insights into whether and to what extent FRQ affects the leasing practices of SMEs and accordingly extends prior work that has examined the effects of SMEs' FRQ on their financing with debt overall (Van Caneghem and Van Campenhout 2012) and with bank debt and supplier debt in particular (García-Teruel et al. 2014a and García-Teruel et al. 2014b respectively). Thirdly, despite the fact that leasing is a potentially important financing source for SMEs (Belgian Leasing Association 2015, Leaseurope 2015, Deloof et al. 2007), as far as we know, this study is, together with Deloof et al. (2007), one of the few to look into the leasing practices of SMEs. Related to this, since most prior studies on leasing are US-based (e.g., Beatty et al. 2010, Eisfeldt and Rampini 2009, Sharpe and Nguyen 1995, Krishnan and Moyer 1994), it is also quite unique to look at leasing in a non-US but European regulatory setting. Finally, this study also adds to the literature on the relationship between FRQ and investment (efficiency), by examining whether leasing is negatively related to the underinvestment of firms with low FRQ and by considering European SMEs, a segment of firms that, as far as we are concerned, has not been subject of this research thus far (e.g., Chen et al. 2011, Biddle et al. 2009).

This paper continues as follows. Section 4.2 offers an introduction to leasing, provides some evidence on leasing from practice and academia and develops our hypotheses. Section 4.3 discusses the research design and the sampling. The empirical results are presented in section 4.4. Section 4.5 concludes the paper.

4.2 Background, literature review and hypotheses development

4.2.1 Introduction to leasing

In Belgium, leasing has a fairly long-standing tradition going back more than fifty years to the first lease in December 1961 (Belgian Leasing Association 2015). From that moment onwards, leasing has developed gradually to become an increasingly important financing source. Over the last decade, leasing has known a steady growth, in particular for SMEs. As a result, leasing has become a notable financing mechanism for SMEs (Belgian Leasing Association 2015). This is not only true for Belgium but also for the rest of Europe (Leaseurope 2015). The popularity of leasing amongst SMEs can be explained by the fact that a lot of SMEs are unable to pledge sufficient collateral to banks. By consequence, they are often denied access to bank debt (especially long term bank debt) or they can access it only at high costs (Belgian Leasing Association 2015, Leaseurope 2015). Leasing provides a fruitful financing alternative for this group of SMEs. Interestingly, the recent advancements in banking regulation (e.g., Basel III and CRD IV) impose stricter rules on bank lending and could as such further add to the success of leasing now as well as in the near future (Febelfin 2015).

The rise and significance of leasing is also confirmed by the numbers. For Belgium, for the year 2014 alone, the leasing sector produced new lease contracts worth 4.4 billion euros, i.e., a 5.7% increase compared to the previous year (Belgian Leasing Association 2015). The figures at the European level are very akin and show a 6.7% growth in new agreements for 2014 compared to the year before (Leaseurope 2015). Overall in 2014 in Belgium, there were 81,488 outstanding lease contracts, together amounting to approximately 13.0 billion euros (Belgian Leasing Association 2015). In Europe for the same year, there were 5,864,290 ongoing lease contracts and the total amount included in these was over 614.0 billion euros (Leaseurope 2015). Also in the US, leasing has become an important financing mechanism (Beatty et al. 2010, Eisfeldt and Rampini 2009).

Economically speaking, the expansion of leasing is a promising evolution as leasing is perhaps the financing source that is most closely related to investment. Evidence from Leaseurope (2015) illustrates that SMEs that employ leasing invest twice as much as compared to SMEs that do not lease. Likewise, leasing has the potential to spur economic growth, employment and innovation.

As far as accounting is concerned, a distinction is made in Belgium local GAAP between operating leasing and financial leasing[61] (KB No. 55 November 10 1967, KB October 8 1976 Art. 26). Briefly, financial leasing implies (1) that the lessee instructs the lessor on the type of asset that is sought, (2) that the lessor supplies the lessee with an asset satisfying the lessee's wishes, (3) that the lessee becomes the fiscal owner of the leased asset and employs it for the execution of its business activities solely, (4) that the lessee makes regular lease payments to the lessor that are aligned with the value of the leased asset, and (5) that at the end, the lessee is given the possibility to acquire the leased assed at a predetermined salvage price. All other agreements are essentially considered operating leases[62].

The accounting treatment of financial leases and operating leases is both for the balance sheet and the P&L statement quite different. Firstly, financial leases create an asset on the lessee's balance sheet, whilst operating leases provoke off-balance accounting. Secondly, the lessee in a financial lease subtracts the depreciation on the leased asset and the interest part of the lease payments in its P&L statement, whilst for the lessee in an operating lease the lease payments are fully deductible as costs. Related to this, as financial leases and operating leases have a divergent effect on bottom-

[61] Financial leasing is sometimes called capital leasing.

[62] According to the Belgian Leasing Association financial leases account for 69.3% of all lease contracts in 2014 in Belgium and hence clearly surpass operating leases (Belgian Leasing Association 2015).

line net income, the classification of leases as either financial leases or operating leases has implications for the firms' taxable income.

Since operating leases are in essence not that different from typical renting contracts, in this study, we focus on financial leases. As financial leases have besides a renting aspect also a clear financing aspect, they resemble bank debt closer than operating leases (Krishnan and Moyer 1994), which makes an examination of the role of FRQ and information asymmetry for financial leases more relevant than for operating leases.

4.2.2 Prior literature

In the academic literature, the vast majority of studies in the field of leasing (e.g., Beatty et al. 2010, Eisfeldt and Rampini 2009, Sharpe and Nguyen 1995, Krishnan and Moyer 1994) have two characteristics in common, i.e., they are conducted in a US regulatory setting and they build upon a comparison between leasing and other types of debt.

A first prominent research stream seeks to answer the debate about leasing and (non-leasing) debt being either complementary or supplementary methods of financing. One often refers to this debate, which focused primarily on large firms, as the so-called 'leasing puzzle' (Deloof et al. 2007). According to traditional finance theory, leasing and debt ought to be substitutes as both leasing and debt imply a commitment to fixed payments which reduces the entity's capacity to take on more debt (Deloof et al. 2007). The empirical findings on this relationship however are mixed. While most studies indeed confirmed the substitution between leasing an debt (see Deloof et al. 2007 for a review), other studies (e.g., Ang and Petersen 1984) found a positive relation between leasing and debt. According to Smith and Wakeman (1985) and Marston and Harris (1988), this anomaly is most likely triggered by not controlling for a firm's debt capacity. They argue that firms that

consume a lot of debt are also prone to use more leases. Nonetheless, over time, for each individual firm, leasing and debt will still be negatively associated. A more conceptual argument for the established complementarity of leasing and debt was provided by Lewis and Schallheim (1992) and builds upon tax advantages inherent to leasing. The theory of these authors is principally that, in exchange for lower rental payments, a lessee with few corporate taxes can pass on excess tax shields in the form of tax-deductible depreciation expenses to a lessor seeking for tax shields. In the framework of Lewis and Schallheim (1992), it is assumed that the lessor subtracts depreciation charges from its taxable income and that the lessee does the same for the rental payments.

Compared to Lewis and Schallheim (1992), financial leasing in Belgium is however a different setting where the lessee becomes the fiscal owner of the leased asset and thus writes off this asset for tax purposes. Also prompted by the similarities that exist between financial leasing and secured debt (Krishnan and Moyer 1994) and by the empirical evidence for the Belgian leasing market in Deloof et al. (2007) and Deloof and Verschueren (1999), we expect to find that financial leasing and bank debt (especially long term bank debt) are, at least to a certain extent, substitutes in our research setting.

A second well-established line of research in the area of leasing deals with the choice between leasing and (non-leasing) debt taking a bankruptcy perspective. This can be ascribed to the different treatment of (a particular sort of) leasing and (secured) debt under Chapter 11 of the US bankruptcy code (see e.g., Eisfeldt and Rampini 2009 or Sharpe and Nguyen 1995). That is to say, in the US, from a legal point of view, a distinction is made between so-called leases intended as security and true leases depending on how much benefit and risk of ownership the lease agreement transfers

from the lessor to the lessee[63]. With leases intended as security, the lessee obtains effective ownership of the leased asset, whilst with true leases the effective ownership of the leased asset stays with the lessor. If a lessee of a lease intended as security goes into bankruptcy, the leased asset is subject to automatic stay, which prohibits recovery of the leased asset by the lessor. Consequently, the lessor has, like secured creditors, no absolute guarantee that its claim will be met. However, at the moment a lessee of a true lease fails, the lessee has the choice between assuming the lease or rejecting the lease. Assuming the lease involves essentially making the lease payments as included in the lease contract. In this case, the lessor receives all agreed lease payments in full even after the filing for bankruptcy by the lessee. Rejecting the lease implies breaching all obligations enclosed in the lease contract, in which case the lessor can basically repossess the leased asset immediately. As a result, it is contended that true leases provide lessors with a superior claim to vindicate the leased asset in times of lessee bankruptcy, giving them an advantage over secured debtholders.

Although the accounting partitioning in financial and operating leases in Belgium and the US is very similar, the Belgian legal context exploited in this study differs notably from the US one that is used extensively in prior research. That is to say, Belgian bankruptcy laws do not discriminate between multiple types of leases that are settled differently in the event of lessee default. In Belgium, as is the case in other European countries including the Netherlands and France, for law issues, the lessor remains legally the owner of the leased asset and accordingly is entitled to recover it as soon as the lessee goes bankrupt (De Wilde 2005). Hence, the lessors of the financial leases

[63] It should be noted that in the US, for accounting purposes, SFAS No.13 'Accounting for Leases' distinguishes between operating leases and financial leases. This classification is closely related but not identical to the legal one in that operating leases are usually true leases while financial leases are more often leases intended as security than they are not.

in this study hold a superior claim on the leased asset that is similar to the one given to lessors of true leases in the US. In short, one could postulate that the interests of the lessors in financial leases in Belgium are fundamentally better protected than those of any other party providing either secured or unsecured debt to the lessee[64].

4.2.3 Development of hypotheses

The comparison of financial leasing and ordinary long term bank debt in Belgium, which is key for this study, brings forth two observations which seem to some extent paradoxical. That is to say, whilst at first glance, financial leasing and conventional long term bank debt demonstrate a number of largely comparable attributes (*observation 1*), financial leasing has some unique features placing it apart from typical long term bank loans (*observation 2*). In this paragraph we elaborate further on these observations and derive from each one of them a testable hypothesis regarding the link between SMEs' FRQ and their reliance on financial leasing.

The first observation that, in general terms, financial leasing and conventional long term bank debt have important characteristics in common is supported by multiple sources in prior literature (including Deloof et al. 2007, Deloof et al. 1999, Krishnan and Moyer 1994). Both financial leasing and regular long term bank debt are financial debts and hence it can be argued that both imply 'fixed, contractual obligations that reduce the firm's debt capacity' (Deloof et al. 2007, p.491). Accordingly, as traditional finance theory suggests, Deloof and Verschueren (1999) find that, in Belgium, financial leasing and straight long term bank loans are substitute sources of financing. It

[64] There are circumstances though in which the bankruptcy trustee can compel the continuation of the lease. Albeit vindication of the leased asset by the lessor is then made impossible, the lease payments are paid to the lessor before other debtholders are reimbursed. So also then, the lessor has thus a superior right compared to these other debtholders.

is for that same reason that an important fraction of the lessors that are out there are large financial institutions that are also active in granting regular loans to companies.

Van Caneghem and Van Campenhout (2012) have demonstrated that SMEs with higher FRQ have, all else equal, a higher overall leverage. As concerns financial debt, the findings by Vander Bauwhede et al. (2015) stress that creditors charge on average higher interest rates as the FRQ of SMEs deteriorates. Further, the work by García-Teruel et al. (2014a) has documented a positive association between SMEs' FRQ and their use of bank debt denoting that the assets of better reporting SMEs are overall financed to a larger extent with credit from banks than those of worse reporting ones. In a follow-up study, García-Teruel et al. (2014b) show that, in contrast to SMEs with lower FRQ, SMEs with higher FRQ obtain on average a larger fraction of supplier debt as well. All findings from the aforesaid empirical studies are consistent with the presumption from the theoretical models by Easley and O'Hara (2004) and Leuz and Verrecchia (2005), i.e., lower FRQ by firms aggrandizes the information asymmetry and the risks associated with it for the investors of these firms and hence coerces these investors to protect their own position (e.g., by asking higher risk premia or by credit rationing).

Combining these arguments, it can be expected that also financial leasing is related positively to SMEs' FRQ, which is the first hypothesis[65].

H1: There is a positive association between SMEs' FRQ and financial leasing

As concerns the second observation, financial leasing in Belgium does exhibit a number of interesting characteristics distinguishing it from conventional long term bank debt and these

[65] The fact that lessors value FRQ is in some way confirmed by Schallheim et al. (1987) that show that the yield for lessors is inversely related with the amount of information that is available on the lessee.

peculiarities may also shape the relationship FRQ has with financial leasing. Whereas the findings in prior literature suggest that SMEs' FRQ is most likely positively associated with long term bank debt (García-Teruel et al. 2010, García-Teruel et al. 2014a), they are still inconclusive with respect to how FRQ, long term bank debt and financial leasing relate to one another and how FRQ relates to the mix of long term bank debt and financial leasing more in particular.

On the one hand, the financial leases in this study enjoy a clear benefit over normal long term bank debt. That is to say, at the heart of these leases there is a superior claim on the leased asset given to the lessor which can be exerted in the case of lessee default. Similarly to lessors in US true leases (Beatty et al. 2010, Eisfeldt and Rampini 2009, Sharpe and Nguyen 1995, Krishnan and Moyer 1994), when it comes to lessee default, the lessors in our sample can thus regain physical possession over the leased asset easier than a secured debtholder can recover its pledged collateral. This basically puts the lessor in a privileged position compared to any other group of creditors. Furthermore, Deloof et al. (2007) and Krishnan and Moyer (1994) claim that, even prior to the declaration of bankruptcy of the lessee, the control rights of lessors are superior to those of other debtholders since lessors can often seize the asset that is subject to the lease contract at fairly low costs as soon as the lessee fails to comply with the lease terms. Also Eisfeldt and Rampini (2009) state that lessors' ability to repossess the leased asset improves their bargaining power, even outside of lessee bankruptcy.

Given the enhanced protection of lessors as compared to other creditors, leasing becomes progressively more important in occasions where creditors face more risk. Examples are situations

plagued by large information asymmetry[66], situations with high agency costs and situations with elevated bankruptcy risk (Sharpe and Nguyen 1995, Krishnan and Moyer 1994). Under these circumstances, other creditors are often either unwilling to extend (more) credit or they are only willing to do so at a very high cost and hence firms find themselves to be financially constrained (Sharpe and Nguyen 1995). The reason for the importance of leasing to financially constrained firms is that for these firms leasing is often the financing alternative with the lowest cost. And, for some of them, leasing ends up to be the only feasible financing alternative. This is because leasing gives lessors priority over other debtholders and accordingly cuts their relative bankruptcy costs (Krishnan and Moyer 1994). As such, it allows lessors to extend more credit and/or at lower cost to firms experiencing financial constraints (Leaseurope 2015, Eisfeldt and Rampini 2009, Sharpe and Nguyen 1995)[67]. In this respect it is also argued that the debt capacity of leasing exceeds the one of secured debt (Eisfeldt and Rampini 2009).

Consistent with these arguments, Eisfeldt and Rampini (2009), Sharpe and Nguyen (1995), and Krishnan and Moyer (1994) have argued that, whereas less constrained or unconstrained firms prefer to own their assets, firms that are hampered more by financial constraints exhibit a higher propensity to lease in general and obtain overall a larger fraction of their assets through leasing.

On the other hand, compared to normal bank loans, financial leasing has two specific drawbacks. To start with, financial leasing entails more complex agreements[68] and inevitably higher transaction

[66] In this respect, Sharpe and Nguyen (1995) argue that with high degrees of information asymmetry, leasing will be found at the top of the pecking order of external financing options.

[67] Another explanation for leasing being a valuable financing option for financially constrained firms is the practitioners' view that leasing preserves capital or equally that leasing is a form of 100% financing (Eisfeldt and Rampini 2009).

[68] Krishnan and Moyer (1994) describe a lease contract as a bundle of two contracts: one that specifies the rights and duties of both the lessor and the lessee in using the asset and one that arranges the financing conditions.

costs (Krishnan and Moyer 1994). Moreover, higher transaction costs are not only incurred in the contracting phase but also in the execution phase. For instance, asset disposal or asset replacement are more difficult and costly to carry out (Krishnan and Moyer 1994). Additionally, financial leasing also involves specific agency costs due to the inherent separation of ownership of control (Eisfeldt and Rampini 2009). For example, lessees typically care less about maintenance and preserving the value of the leased asset (Sharpe and Nguyen 1995).

Eventually, for SMEs, the decision process regarding how a particular investment that is not fully equity-financed should be financed often comes down to making a choice between financial leasing versus buying combined with long term borrowing from banks and thus to making a trade-off between the benefits and costs of financial leasing compared to long term bank debt (Eisfeldt and Rampini 2009, Krishnan and Moyer 1994). This is equivalent to saying that having (potentially more) access to (potentially cheaper) external financing has to be weighed against bearing higher transaction and agency costs.

It is to be expected that SMEs with lower FRQ are more likely to value the benefits of financial leasing more than the costs and hence prefer financial leasing over long term bank debt. This expectation is consistent with a number of empirical studies that have demonstrated that, compared to better reporting SMEs, SMEs with lower FRQ entail more information asymmetry for creditors and are accordingly more likely to be financially constrained (Vander Bauwhede et al. 2015, García-Teruel et al. 2014a, García-Teruel et al. 2014b, Van Caneghem and Van Campenhout 2012) and with the work by Eisfeldt and Rampini (2009), Sharpe and Nguyen (1995) and Krishnan and Moyer (1994) in which it is documented that in particular for firms suffering from financial constraints, leasing constitutes an important financing source. The expectation is also in line with a study related to ours, Beatty et al. (2010), that shows for a sample of Compustat manufacturing

firms that FRQ is negatively associated with their reliance on operating leases over the period 1995-2006.

SMEs with higher FRQ in contrast are less likely to face financial constraints and therefore they are more inclined to buy the asset and finance it with a long term bank loan in order to avoid the higher costs related to financial leasing. SMEs with high FRQ are thus unlikely to rely on financial leasing as an important source of funding.

Bringing it all together, it can be postulated that, for the lessor, financial leasing offers all benefits of secured long term bank debt and then one more, i.e., a superior claim on the leased asset. Due to this, it is to be expected that, as the FRQ of SMEs deteriorates, the substitution effect between financial leasing and long term bank debt will start to play in a way that financial leasing gains importance vis-à-vis long term bank loans. This translates into the second hypothesis.

H2: Compared to conventional long term bank debt, financial leasing is relatively more important for SMEs with lower FRQ

4.3 Research design and data

To test our two hypotheses, a regression approach is applied. In particular, regression equations *(4.1)* and *(4.2)* are estimated for H1 and H2 respectively. i and t index firms and years. Both regression equations define leasing as a function of FRQ, i.e., the test variable, and a number of firm-, industry- and time-level control variables, being size, age, asset tangibility, profitability, default risk, growth, industry, and year. These control variables are largely consistent with prior

literature (e.g., Deloof et al. 2007, Deloof and Verschueren 1999)[69]. *(4.1)* additionally controls for long term bank debt to capture a potential substitution effect between financial leasing and long term bank debt (Deloof and Verschueren 1999).

$$\left[{}^{avg.Leasing}/_{avg.TA}\right]_{i,t} = \alpha_0 + \alpha_1 * AQ_{i,t-1} + \alpha_2 * LT\ bank\ debt_{i,t-1} + \alpha_3 * Size_{i,t-1} + \alpha_4 * Age_{i,t-1} + \alpha_5 * Asset\ tangibility_{i,t-1} + \alpha_6 * Profitability_{i,t-1} + \alpha_7 * Z' - score_{i,t-1} + \alpha_8 * Past\ growth_{i,t-1} + \alpha_9 * Growth\ prospects_{i,t-1} + \alpha_{10-15} * Industry\ dummies_{i,t-1} + \alpha_{16-25} * Year\ dummies_{i,t} + \varepsilon_{i,t} \quad (4.1)$$

$$\left[{}^{avg.Leasing}/_{avg.(Leasing + LT\ Bank\ debt)}\right]_{i,t} = \beta_0 + \beta_1 * AQ_{i,t-1} + \beta_2 * Size_{i,t-1} + \beta_3 * Age_{i,t-1} + \beta_4 * Asset\ tangibility_{i,t-1} + \beta_5 * Profitability_{i,t-1} + \beta_6 * Z' - score_{i,t-1} + \beta_7 * Past\ growth_{i,t-1} + \beta_8 * Growth\ prospects_{i,t-1} + \beta_{9-14} * Industry\ dummies_{i,t-1} + \beta_{15-24} * Year\ dummies_{i,t} + \varepsilon_{i,t} \quad (4.2)$$

For testing H1, the dependent variable is the proportion of total assets that SMEs finance through financial leasing. For H2, we look into the share of long term financial debt that is financial leasing. We hereby label the sum of financial leasing and long term bank debt as long term financial debt[70].

[69] The major difference with Deloof et al. (2007) and Deloof and Verschueren (1999) is that, in addition to firm size, this study also controls for firm age. This said, the remaining control variables in this study measure the exact same concepts as in Deloof et al. (2007) and Deloof and Verschueren (1999). Their operationalization may however slightly differ. For instance, for asset structure we use the ratio of net property, plant and equipment to total assets whereas Deloof et al. (2007) and Deloof and Verschueren (1999) use the ratios of current assets to total assets and financial assets to total assets.

[70] A necessary condition for testing the theoretical arguments in H2 is that financial leasing and long term bank debt have a lot in common. Bearing in mind this and the fact that financial leasing and long term bank debt are assumingly the main classes of long term financial debt for SMEs, for simplicity purposes, we employ the wording long term financial debt to refer to their sum.

For both dependent variables, we average out changes over the considered year *t* by taking the average of year *t* and *t-1* in both the numerator and denominator.

In line with prior empirical studies (e.g., Francis et al. 2005, García-Teruel et al. 2014a), FRQ is measured as EQ and as AQ to be more precise. The rationale underlying the AQ concept is that accruals are somehow like a double-edged sword. On the one hand, they have the ability to smooth out transitory fluctuations in cash flows and to produce earnings numbers that are more informative about the firm's current and future performance (Dechow and Dichev 2002). In this respect it is accordingly argued that as compared to current cash flows, current earnings numbers produce more reliable forecasts of future cash flows (Dechow et al. 1998, Dechow 1994). On the other hand, estimating accruals involves making lots of assumptions and estimates (Dechow and Dichev 2002). Basically, this means that estimation errors are inevitable. A good example are provisions for bad debt and the numerous uncertainties the firm faces here. What is more, also opportunistic earnings management can create accrual errors. In short, higher AQ implies that accruals and earnings numbers are to a larger extent free from error of any kind and hence enable a better prediction of the firm's future cash flows and reimbursement capacity, which is the most pressing concern of every creditor. AQ is measured consistent with this thought employing the model developed by Dechow and Dichev (2002) and extended by McNichols (2002). See section 1.4.2 for the more insights into the precise computations.

For the definitions of the control variables we refer to Table 4.1, which lists all variables that are incorporated in the analyses throughout this study together with their definitions.

[Insert Table 4.1 about here]

All independent variables are lagged one period to take into account that previous-year financial statements are the most recent available to creditors. All continuous variables but age[71] are also winsorized at their 1% and 99% percentiles.

The sample for this study is obtained from the Bel-first® database of Bureau Van Dijk. It contains the full format[72], non-consolidated financial statements of all Belgian limited liability SMEs over the 2004-2014 period, except for those operating in government, financial and utility industries (Vermoesen et al. 2013, Heyman et al. 2008, Minnis 2011). Since data from a EU member state are employed, SMEs are defined following the European Commission's SME definition (European Commission 2014) and this definition is applied consistently with prior studies on European data (Vermoesen et al. 2013, Deloof et al. 2007). Accordingly, a company qualifies as SME when the following criteria are met: (1) headcount in Full-Time Equivalents (FTEs) smaller than 250, (2) annual turnover not higher than 50 million euro *or* balance sheet total not exceeding 43 million euro, and (3) no equity stake of at least 25%. Firm-year observations are discarded whenever total assets increase or decrease with a factor of two or more or when the number of FTEs is smaller than three so as to exclude the influence of meaningful restructuring activities and fiscal motives respectively. Financial statements that cover a period that is longer or shorter than twelve months are also not included in the sample in order to ensure flawless AQ measurement.

[71] As there is little uncertainty regarding the incorporation dates, for the age variable outliers are unlikely to occur.

[72] In Belgium, a distinction is made between full format financial statements and abbreviated format financial statements. In this study, abbreviated format financial statements are not considered mainly because they do not allow to isolate leasing from other kinds of debt.

The full format financial statements that are utilized in this study provide detailed data on financial leasing and other types of debt and are accordingly well-suited to test the hypotheses listed in this study (Vermoesen et al. 2013).

Computing AQ with the model by Dechow and Dichev (2002) and McNichols (2002) involves data on eight consecutive years (see section 1.4.2) and hence induces a large drop in sample size. After elimination of firm-year observations for which the selected AQ model cannot be executed as well as firm-year observations with missing values for the remaining variables, our sample selection results in a sample consisting of 18,538 financial statements from 4,290 Belgian SMEs over the years 2004 until 2014 that can be employed to test H1. For 8,114 of these financial statements the sum of financial leasing and long term bank debt is different from zero (i.e., there is long term financial debt), which implies that they can be used for testing H2. The different steps of the sample selection procedure are summarized in Table 4.2.

[Insert Table 4.2 about here]

4.4 Empirical results

4.4.1 Uni- and bivariate statistics

Table 4.3 presents summary statistics for the variables used thru this study. As shown in Panel A, in the broad sample (N = 18,538 firm-years), the proportion of average financial leasing in average total assets exhibits a mean value of 1.4%, implying that more or less 1.4% of the asset base of the average sampled firm-year is financed through financial leasing. This seemingly low figure is partially explained by the fact that more than 78.0% of the firm-years in our sample do not call upon financial leasing (61.0% or the majority of these have no long term debt at all, not reported). For those firm-years that do use financial leasing, i.e., approximately one out of five, the proportion of financial leasing in total assets rises to 6.6% on average. And, amongst these firm-years, there are some heavy users of financial leasing as they go up to and over a quarter of their assets that is

financed with financial leasing (maximum = 32.9%, not reported). Panel B provides descriptive statistics for the subsample of firm-years that actually hold long term financial debt, i.e., financial leasing, long term bank debt or both (N = 8,114 firm-years). In this subsample, more than half (i.e., 50.2%) of the firm-years has financial leasing in its books. The average financial leasing in average long term financial debt ratio suggests that overall close to a third (i.e., 31.8%) of the long term financial debt of the average firm-year in the sample is financial leasing, which implies that for every euro of long term bank debt, there is approximately 0.5 euro of financial leasing. In sum, these figures suggest that financial leasing is a not unimportant financing alternative for SMEs but that at the same time one should not overestimate its importance given that it does not appear to be omnipresent on all SMEs' balance sheets.

Contrasting the values of the AQ variable with the ones reported in existing studies that applied the same AQ estimation model learns that, both when compared to US listed firms in prior research (Francis et al. 2005) and when compared to Spanish SMEs in prior work (García-Teruel et al. 2014a), the Belgian SMEs in this study have relatively low AQ values. Further, a comparison of the AQ values in Panels A and B suggests that the AQ is inclined to be higher (i.e., less negative) in the subsample of firm-years with long term financial debt (N = 8,114 firm-years) than in the broad sample (N = 18,538 firm-years).

Following the European SME definition as applied in this study, the bulk of firm-years are from small and medium-sized enterprises (as opposed to micro-firms, not reported) operating in retail and manufacturing industries (as opposed to other industries, see Table 4.3). Further, the sample mainly consists of firm-years from rather mature and low-growth SMEs that are fairly profitable and healthy (Cole 2013, Van Caneghem and Van Campenhout 2012, Heyman et al. 2008).

[Insert Table 4.3 about here]

Table 4.4, Panel A, demonstrates that, in line with H1, firm-years with at least a minimum of financial leasing (firm-years with financial leasing different from zero get a value of one) have on average a significantly higher AQ than firm-years without any financial leasing ($p<0.01$). To explore the relationship between SMEs' FRQ and financial leasing in more depth, we examine the mean of the average financial leasing in average total assets ratio across the five AQ quintiles (following García-Teruel et al. 2010). As shown in Panel B and again consistent with H1, this ratio grows over the AQ quintiles so that the 20% firm-years in the highest (or best) AQ quintile (i.e., Q5) exhibit the highest proportion of financial leasing in total assets. This is also clearly portrayed in Panel A1 (bar chart) and Panel A2 (trend line) of Figure 4.1. To emphasize that the small drop from Q4 to Q5 is not statistically significant while the other steps are significant at the 10% level (see Table 4.4, Panel B), we modified the color of the last bar to grey.

Consistent with H2, it can be shown that firm-years that use financial leasing have overall a significantly lower AQ as compared to firm-years that do not use financial leasing and finance exclusively with long term bank debt (see Table 4.4, Panel C, $p<0.01$)[73]. In Panel D of Table 4.4, similarly to Panel B, we look at the proportion of average financial leasing in SMEs' average long term financial debt across the AQ quintiles. It is documented that this proportion decreases monotonously in AQ, which supports H2. This is presented graphically in Figure 4.1, in Panel B1 by means of a bar chart and in Panel B2 by means of a trend line. In addition to being statistically significant, the negative association between AQ and the proportion of financial leasing in long term financial debt is also economically relevant. That is to say, from Q1 to Q5, there is a decline

[73] Likewise, it can be shown that firm-years that use long term bank debt have overall a significantly higher AQ as compared to firm-years that do not use long term bank debt and finance exclusively with financial leasing (not reported, $p<0.01$).

in the proportion of financial leasing in long term financial debt amounting to 21.5 percentage points (i.e., a decline of more than 50.0%).

[Insert Table 4.4 about here]

[Insert Figure 4.1 about here]

Table 4.5 provides the correlation matrices for both the broad sample (N = 18,538 firm-years) and the subsample of firm-years with long term financial debt (N = 8,114 firm-years). In Panel A, AQ relates positively to the proportion of financial leasing in total assets according to the Pearson correlation coefficient (0.043, $p<0.01$). In Panel B, it can be noted that, bivariately, the proportion of financial leasing in long term financial debt relates negatively to AQ (-0.159, $p<0.01$). Both observations are in line with the analyses in Table 4.4 and Figure 4.1 and hence with H1 and H2.

[Insert Table 4.5 about here]

4.4.2 Multivariate regression analyses

As can be seen from Table 4.3, Panels A and B, the dependent variable in both regression equation *(4.1)* and regression equation *(4.2)* is censored between zero and one with a relatively large number of zeros. To account for the limited nature of these variables, in line with Deloof et al. (2007) and Deloof and Verschueren (1999), we preferred to run tobit regressions. Given the non-independence of the firm-years, in all specifications, standard errors were clustered at the firm level (Petersen 2009). The results of regression equations *(4.1)* and *(4.2)* are documented in Table 4.6.

[Insert Table 4.6 about here]

In Table 4.6, Panel A, the average marginal effects from estimating regression equation *(4.1)* on the broad sample (N = 18,538 firm-years) are presented. Our test variable, i.e., AQ, attains statistical significance at the 1% level indicating that FRQ happens to be a relevant parameter in explaining SMEs' usage of financial leasing[74]. Furthermore, in support of H1, its positive coefficient implies that the proportion of financial leasing in total assets increases in AQ. This suggests that, as compared to SMEs with lower AQ figures, SMEs with higher AQ figures, are expected to entail less information asymmetry for lessors and are therefore able to finance a greater share of their asset base via financial leasing. In terms of economic impact, the differential in average financial leasing over average total assets between the 10^{th} and 90^{th} AQ percentile is estimated to be on average 0.00570, i.e., 57.0 basis points or 0.570 percentage points. This is computed by multiplying average marginal effect of AQ from Table 4.6, Panel A (i.e., 0.067) with the interpercentile range p90-p10 of AQ from Table 4.3, Panel A (i.e., 0.085). In other words, a hypothetical SME in our sample that would manage to ameliorate its AQ from the p10 value to the p90 value would be able to raise the proportion of financial leasing in total assets with on average 0.570 percentage points, all else equal.

The significantly negative effect that is encountered for long term bank debt ($p<0.01$) implies that, as expected in our research setting, financial leasing and long term bank debt are substitutive methods of fixed-claim financing, confirming prior findings by Deloof et al. (2007) and Deloof and Verschueren (1999).

The effect of asset tangibility is significantly larger than zero ($p<0.01$), which indicates that, as financial leasing is predominantly used to finance tangible assets, it is relatively more important

[74] Also with bootstrapped standard errors (500 random samples with replacement and clustering at the firm), this remains to be the case (not reported).

for SMEs with proportionally less current assets and financial assets and more tangible assets (Deloof et al. 2007, Deloof and Verschueren 1999).

In Eisfeldt and Rampini (2009), Sharpe and Nguyen (1995), Krishnan and Moyer (1994) and in the development of H2 (see section 4.2), it is argued that, in comparison with firms without or with less financial constraints, more financially constrained firms are more likely to make use of leasing since they face high costs of other forms of external debt financing. For example, it can be documented that firms with low creditworthiness are expected to rely more on leasing than healthier firms (Krishnan and Moyer 1994). The estimated coefficients of the remaining significant control variables are consistent with this in that they show that financial leasing becomes an increasingly relevant financing alternative for SMEs that stand a larger chance of experiencing financial constraints. That is to say, we find that especially, younger SMEs, less profitable SMEs, SMEs that are closer to failure, and fast growing SMEs, are relatively more inclined to obtain their assets through financial leasing. Concerning firm age, leasing is likely to be more common amongst younger firms since these firms entail a higher level of information asymmetry[75] and are accordingly more likely to be financially constrained compared to more mature firms (Sharpe and Nguyen, 1995). Concerning profitability and default probability, Krishnan and Moyer (1994) document that firms that are more distressed, such as firms with lower operating income, are more likely to finance their assets with leasing than less risky firms. The reason for this is that for firms closer to financial distress, leasing may prove to be a cheaper financing source than other sources of external debt. Concerning growth, it can be argued that rapidly growing firms are more liquidity-

[75] This is explained by younger firms having a shorter track record and being less likely to have established long-standing relationships and respectable reputations (Cole 2013, Van Caneghem and Van Campenhout 2012).

constrained and therefore use leasing more extensively than more steady firms (e.g., Krishnan and Moyer 1994).

For brevity, the results for the industry- and year fixed effects are not disclosed in Table 4.6. For the empirical model in Panel A, the industry fixed effects basically illustrate that compared to retailing (i.e., the base category), the use of financial leasing is more widespread in the industries manufacturing, construction and transport and communication and less widespread in the industries agriculture, fishing and natural resources, hotels and restaurants and services to companies. With 2004 as reference year, the year fixed effects show an increase in the popularity of financial leasing since 2009.

In Table 4.6, Panel B, following Deloof et al. (2007), regression equation *(4.1)* is re-estimated using OLS on the subsample of SMEs that have at least some debt related to financial leasing on their beginning and/or ending balance sheet (N = 4,073 firm-years). This is an alternative to tobit to account for the relatively large number of firm-years without financial leasing in their books. Consistent with the A Panel, a significantly positive effect is found for AQ ($p<0.05$), highlighting that, in general, SMEs with higher AQ tend to use relatively more financial leasing than SMEs with lower AQ[76]. The differential between the 10th and 90th AQ percentile in terms of average financial leasing over average total assets is now 1.035 percentage points on an overall mean of 6.6% (see Table 4.3, Panel A and Table 4.6, Panel B).

[76] Still another methodology suggested by Deloof et al. (2007) to account for the zeros in the dependent variable that is used for H1 is to log transform this variable, i.e., $\log(\ ^{variable}/_{(1-variable)})$. Doing so, compared to Panel A of Table 4.6, the result for AQ is unchanged in that it is still positively significant at the 1% level (N = 4,073 firm-years).

Using a probit model, it can also be shown that an SME's AQ relates positively to the likelihood that this SME has financial leasing (see Appendix 4.1).

Regarding the controls, in contrast to Panel A of Table 4.6, size and growth prospects become negatively significant. Since less information is available on smaller SMEs, similarly to younger SMEs in Panel A, smaller SMEs entail more information asymmetry and are thus more likely to be financially constrained (Cole 2013, Van Caneghem and Van Campenhout 2012). This explains why, consistent with Eisfeldt and Rampini (2009), financial leasing is relatively more prevalent amongst smaller SMEs than amongst larger SMEs. The effect of growth prospects is not in line with the effect of past growth that was established in Panel A. Nonetheless, given the measurement of growth prospects, this may just indicate that financial leasing is typically not used to finance intangible assets.

In Table 4.6, Panel C, regression equation *(4.2)* is estimated. The results display a significantly negative effect of AQ ($p<0.01$)[77]. In line with H2, this means that, for SMEs, the proportion of financial leasing in long term financial debt decreases in AQ. In other words, in comparison to SMEs with higher AQ, SMEs with lower AQ generally use relatively more financial leasing and relatively less long term bank debt. The explanation for the latter is that lessors in Belgian financial leases have a claim on the leased asset that is in all occasions superior to the one of banks. And, due to this superior protection, they are less negatively affected by the higher information asymmetry lower AQ provokes. As concerns the economic significance of this effect, the differential in average financial leasing over average long term financial debt between the 10^{th} and 90^{th} AQ percentile equals 16.422 percentage points on an overall mean of 31.8% (see Table 4.3, Panel B and Table 4.6, Panel C). Besides being highly statistically significant, the effect of SMEs' AQ on the mix of financial leasing and long term bank debt is thus also economically meaningful.

[77] Also this result is confirmed with bootstrapped standard errors (500 random samples with replacement and clustering at the firm, not reported).

Apart from AQ, other important explanatory variables in regression equation *(4.2)* are size, age, asset tangibility, and Z'-score. For size, age and Z'-score the interpretation is identical to the one in Panels A and B. The observed effect of asset tangibility is the outcome of two underlying effects. Firstly, as financial leasing is predominantly used to finance investments in tangible assets, there is a positive association between financial leasing and asset tangibility (see Panels A and B). Secondly, tangible assets are easily collateralizable since there are active secondary markets to trade them (Cole 2013, Van Caneghem and Van Campenhout 2012). Therefore, given their larger potential to provide collateral, SMEs with relatively more tangible assets are expected to have relatively greater access to long term bank debt. As the combined effect is negative, the second effect is apparently stronger than the first effect. The fact that SMEs seem to have a preference for long term bank debt is consistent with the higher transaction and agency costs leasing brings about (see section 4.2).

4.4.3 Additional analysis

SMEs with the lowest FRQ arguably face the largest financial constraints (Vander Bauwhede et al. 2015, García-Teruel et al. 2014a, García-Teruel et al. 2014b, and Van Caneghem and Van Campenhout 2012)[78]. On top of that, the results of this study reveal that especially for these SMEs, financial leasing is a relatively important source of funding. Now, given these observations and given the link that exists between financial leasing and investment, in this additional analysis, we examine whether financial leasing is positively associated with the investments made by SMEs with low FRQ.

[78] For instance, in our broad sample (N = 18,538 firm-years), of the 20% firm-years with the lowest AQ (i.e., Q1 in prior analyses) more than four out of five have no long term bank debt (not reported).

In particular, in the broad sample (N = 18,538 firm-years), from the 20% firm-years with the lowest AQ (N = 3,708 firm-years), we draw a subsample of firm-years with financial leases but no long term bank debt in their books. We consider this as the treatment group. From the same 3,708 firm-years, we then construct a control group by identifying firm-years that use neither financial leasing nor long term bank debt. To ensure that the firm-years in both groups are comparable in terms of growth (i.e., past growth as defined in Table 4.1), default risk (Z'-score as defined in Table 4.1), industry (i.e., industry dummies as defined in Table 4.1) and cash flow from operations (i.e., cash flow from operation scaled by total assets), we apply propensity score matching[79]. This yields a treatment group of 389 firm-years. By means of two t-tests it can now be shown that the treatment group exhibits on average larger net property, plant and equipment to total assets ratios (not reported, $p<0.01$) as well as higher percentage growth rates in net property, plant and equipment (not reported, $p<0.1$). This suggest that financial leasing may have the potential to augment the investments in property, plant and equipment by SMEs with low FRQ.

4.5 Conclusion

For lessors, financial leasing in Belgium has all the advantages of secured debt and then one more, i.e., it provides them with a superior claim on the leased asset giving them priority over secured and unsecured debtholders. As a result, in this kind of context which is also found in other European countries, financial leasing can serve as a solution of last resort for firms that have been rationed out by other creditors. The findings provided in this study are generally consistent with this in that

[79] To be precise, for the propensity score matching, we use the nearest neighbor matching technique.

they demonstrate that particularly for SMEs with low FRQ whose access to long term debt is often restricted, financial leasing constitutes a valuable financing alternative.

Exploiting a detailed dataset with 18,538 firm-year observations from Belgian SMEs covering the period 2004-2014 and using AQ as FRQ measure, it is documented first that the share of financial leases in total assets declines as FRQ drops. Subsequently, in a subsample of 8,114 firm-year observations with financial leasing and/or long term bank debt on their beginning and/or ending balance sheet, it is shown that the share of financial leasing in the sum of financial leasing and long term bank debt increases as FRQ falls. This implies that, compared to long term bank debt, financial leasing becomes proportionally more important for SMEs that demonstrate lower FRQ as compared to the better reporting ones.

The results of an additional analysis show that financial leasing is positively associated with the investments of weak reporting SMEs, which means that financial leasing may eventually also be beneficial for others and for the broader economy.

This study adds to the current state of the literature in various ways. Firstly, to the best of knowledge, this study is the first to look at financial leasing in relation to FRQ. Furthermore, apart from Beatty et al. (2010) that look into the relationship between FRQ and the usage of operating leases by US firms, we are unaware of other studies that link FRQ to leasing. Secondly, this study contributes to the research stream that examines how SMEs' FRQ affects their debt financing (i.e., García-Teruel et al. 2014a for bank debt, García-Teruel et al. 2014b for supplier debt, Van Caneghem and Van Campenhout 2012 for debt overall) by studying financial leasing as a financing alternative for one of the most important financing sources for SMEs, i.e., bank debt, and by verifying whether and to what extent SMEs' FRQ affects their reliance on financial leases. Thirdly, the research setting of this study is interesting in two ways. That is to say, we extend the empirical

literature on the leasing practices of SMEs, a strand of literature that is, notwithstanding the fact that leasing is a potentially important financing source for SMEs, to the best of our knowledge rather undeveloped (Eisfeldt and Rampini 2009, Deloof et al. 2007). And, unlike most prior studies (e.g., Beatty et al. 2010, Eisfeldt and Rampini 2009, Sharpe and Nguyen 1995, Krishnan and Moyer 1994) we look at leasing in a non-US but European regulatory setting. Fourthly, this study shows that there exists a positive relation between financial leasing and the investments made by SMEs with low FRQ and as such adds to the literature on the effects of FRQ on investment efficiency (e.g., Chen et al. 2011, Biddle et al. 2009).

To practitioners, this study shows that financial leasing may constitute a valuable source of financing for SMEs with low-quality financial reports that find themselves to be financially constrained. Policy makers can learn from this study that, given the omnipresence of SMEs and the close link with SME investment, financial leasing should be considered a promising financing alternative for this group of companies.

The leasing variables of this study only examine financial leases. The reason for this is that in Belgium operating leases are incorporated as renting expenses in the income statement so that no specific data are available on them. To the extent that operating leases and financial leases are dissimilar, this is a limitation of this study. For two reasons however, this does not constitute a severe threat to the findings provided in this study. Firstly, given the similarities between operating leases and financial leases, adding information on operating leases would probably aid finding statistically significant results without modifying the established effects. Secondly, while financial leases have besides a renting aspect also a financing aspect, the financing aspect is less pronounced for operating leases. In fact, operating leases have more in common with ordinary renting contracts,

which is why for these lease agreements the effect of FRQ is expected to be weaker and less relevant.

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Tables and figure

Table 4.1: Variable definitions

DEPENDENT VARIABLES	DEFINITION
Avg. Leasing / Avg. TA	(Financial leasing in *t* + Financial leasing in *t-1*) / (Total assets in *t* + Total assets in *t-1*)
Avg. Leasing / Avg. (Leasing + LT Bank debt)	(Financial leasing in *t* + Financial leasing in *t-1*) / (Financial leasing in *t* + Financial leasing in *t-1* + LT Bank debt in *t* + LT Bank debt in *t-1*)
TEST VARIABLE	**DEFINITION**
AQ	See section 1.4.2 for exact definition
CONTROL VARIABLES	**DEFINITIONS**
LT Bank debt	Avg. LT Bank debt / Avg. TA
Size	ln (TA)
Age	ln (age in years)
Asset tangibility	net property, plant and equipment / TA
Profitability	operating income / TA
Z'-score	default risk score for privately-held firms (Altman 1983)
Past growth	geometric average percentage asset growth over previous three years
Growth prospects	intangible assets / TA
Industry dummies	6 indicator variables taking 1 for the Nace-BEL industry of interest - 0 otherwise, retailing serves as base case (see Table 4.3 for a break-down of the sample over the Nace-BEL industries)
Year dummies	10 indicator variables taking 1 for the year of interest - 0 otherwise, 2004 serves as reference year

Table 4.2: Sampled firm-year observations (2004-2014)

CRITERIA	DROP	SAMPLE
Belgian SMEs with limited liability		88,113
- restructuring activities	-18,959	
		69,154
- fiscal motives	-6,258	
		62,696
- short or long fiscal year	-1,566	
		61,330
- no non-missing data over eight consecutive years for AQ	-42,750	
		18,580
- missing values	-42	
Final sample H1		*18,538*
- no LT financial debt	-10,424	
Final sample H2		*8,114*

Table 4.3: Descriptive statistics

Panel A: SAMPLE H1 (N = 18,538 firm-years)						
DEPENDENT VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
Avg. Leasing / Avg. TA	0.014	0.051	0.000	0.000	0.029	0.029
4,073 firm-years with leasing	0.066	0.091	0.001	0.023	0.210	0.209
TEST VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
AQ	-0.054	0.038	-0.102	-0.044	-0.017	0.085
4,073 firm-years with leasing	-0.049	0.034	-0.092	-0.040	-0.017	0.075
CONTROL VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
LT Bank debt	0.044	0.111	0.000	0.000	0.142	0.142
Size	8.675	1.203	7.129	8.703	10.030	2.901
Age	3.240	0.568	2.485	3.219	4.007	1.522
Asset tangibility	0.202	0.218	0.007	0.126	0.514	0.507
Profitability	0.076	0.120	-0.030	0.055	0.224	0.254
Z'-score	3.224	1.840	1.161	3.026	5.284	4.123
Past growth	0.040	0.104	-0.085	0.034	0.171	0.256
Growth prospects	0.006	0.020	0.000	0.000	0.012	0.012
Agriculture, fishing and natural resources	0.009	0.096	0.000	0.000	0.000	0.000
Manufacturing	0.288	0.453	0.000	0.000	1.000	1.000
Construction	0.081	0.273	0.000	0.000	0.000	0.000
Hotels and restaurants	0.009	0.094	0.000	0.000	0.000	0.000
Transport and communication	0.123	0.328	0.000	0.000	1.000	1.000
Services to companies	0.124	0.330	0.000	0.000	1.000	1.000
Retailing (i.e., base case)	0.366	0.482	0.000	0.000	1.000	1.000

Table 4.3: Descriptive statistics (cont'd)

Panel B: SAMPLE H2 (N = 8,114 firm-years)						
DEPENDENT VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
Avg. Leasing / Avg. (Leasing + LT Bank debt)	0.318	0.425	0.000	0.000	1.000	1.000
4,073 firm-years with leasing	0.634	0.399	0.028	0.840	1.000	0.972
TEST VARIABLE	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
AQ	-0.045	0.032	-0.085	-0.037	-0.014	0.071
4,073 firm-years with leasing	-0.048	0.033	-0.092	-0.040	-0.017	0.075
CONTROL VARIABLES	MEAN	STDEV	p10	MEDIAN	p90	p90-p10
Size	8.882	1.022	7.632	8.847	10.069	2.437
Age	3.302	0.552	2.565	3.258	4.025	1.460
Asset tangibility	0.279	0.231	0.038	0.220	0.625	0.587
Profitability	0.056	0.091	-0.028	0.042	0.166	0.194
Z'-score	2.718	1.454	0.904	2.623	4.467	3.563
Past growth	0.042	0.099	-0.074	0.035	0.169	0.243
Growth prospects	0.006	0.018	0.000	0.000	0.013	0.013
Agriculture, fishing and natural resources	0.008	0.088	0.000	0.000	0.000	0.000
Manufacturing	0.315	0.464	0.000	0.000	1.000	1.000
Construction	0.105	0.307	0.000	0.000	1.000	1.000
Hotels and restaurants	0.012	0.109	0.000	0.000	0.000	0.000
Transport and communication	0.122	0.327	0.000	0.000	1.000	1.000
Services to companies	0.092	0.290	0.000	0.000	0.000	1.000
Retailing (i.e., base case)	0.346	0.476	0.000	0.000	1.000	1.000

See Table 4.1 for variable definitions.

Table 4.4: Bivariate t-tests

Panel A: AQ by Avg. Leasing / Avg. TA (0 / 1) (N = 18,538 firm-years)			**Panel B:** Avg. Leasing / Avg. TA by AQ quintiles (Q1 TO Q5) (N = 18,538 firm-years)		
	DIFFERENCE	(p-value)		DIFFERENCE	(p-value)
1 - 0	-0.049 - (-0.055) = 0.006***	(0.000)	Q1 - Q5	0.011 - 0.016 = -0.005***	(0.000)
			Q1 - Q2	0.011 - 0.013 = -0.002*	(0.053)
			Q2 - Q3	0.013 - 0.015 = -0.002*	(0.070)
			Q3 - Q4	0.015 - 0.017 = -0.002*	(0.054)
			Q4 - Q5	0.017 - 0.016 = 0.001	(0.393)
Panel C: AQ by Avg. Leasing / Avg. (Leasing + LT Bank debt) (0 / 1) (N = 8,114 firm-years)			**Panel D:** Avg. Leasing / Avg. (Leasing + LT Bank debt) by AQ quintiles (Q1 TO Q5) (N = 8,114 firm-years)		
	DIFFERENCE	(p-value)		DIFFERENCE	(p-value)
1 - 0	-0.048 - (-0.041) = -0.007***	(0.000)	Q1 - Q5	0.425 - 0.210 = 0.215***	(0.000)
			Q1 - Q2	0.425 - 0.359 = 0.066***	(0.000)
			Q2 - Q3	0.359 - 0.318 = 0.041***	(0.007)
			Q3 - Q4	0.318 - 0.281 = 0.037**	(0.010)
			Q4 - Q5	0.281 - 0.210 = 0.071***	(0.000)

***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Table 4.5: Correlation matrices

Panel A: SAMPLE H1 (N = 18,538 firm-years)

VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Avg. Leasing / Avg. TA	1									
(2) AQ	0.043***	1								
(3) LT Bank debt	0.015**	0.181***	1							
(4) Size	0.007	0.281***	0.255***	1						
(5) Age	-0.022***	0.155***	0.164***	0.167***	1					
(6) Asset tangibility	0.270***	0.124***	0.519***	0.190***	0.118***	1				
(7) Profitability	-0.090***	-0.032***	-0.106***	-0.095***	-0.057***	-0.172***	1			
(8) Z'-score	-0.158***	-0.023***	-0.287***	-0.175***	-0.029***	-0.370***	0.388***	1		
(9) Past growth	0.003	0.040***	0.033***	0.160***	-0.036***	-0.032***	0.120***	0.032***	1	
(10) Growth prospects	-0.008	-0.051***	-0.025***	0.011	-0.055***	-0.013*	-0.013*	-0.050***	0.026***	1

Panel B: SAMPLE H2 (N = 8,114 firm-years)

VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Avg. Leasing / Avg. (Leasing + LT Bank debt)	1								
(2) AQ	-0.159***	1							
(3) Size	-0.159***	0.272***	1						
(4) Age	-0.106***	0.153***	0.216***	1					
(5) Asset tangibility	-0.065***	0.119***	0.271***	0.118***	1				
(6) Profitability	-0.024**	-0.007	-0.069***	-0.068***	-0.156***	1			
(7) Z'-score	-0.016	-0.053***	-0.309***	-0.051***	-0.468***	0.428***	1		
(8) Past growth	-0.042***	0.025**	0.180***	-0.011	-0.026**	0.120***	0.024**	1	
(9) Growth prospects	0.042***	-0.075***	-0.021*	-0.065***	-0.039***	-0.037***	-0.049***	0.020*	1

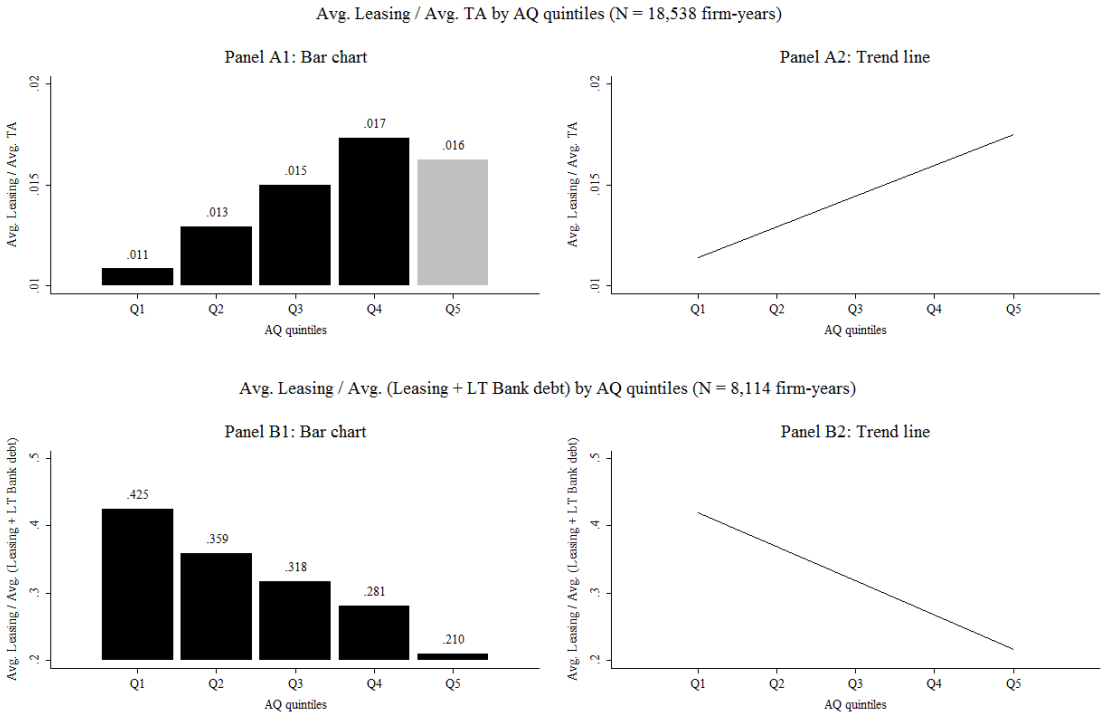
Bivariate Pearson correlation coefficients. See Table 4.1 for variable definitions. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.

Table 4.6: Primary analyses

	Panel A: Avg. Leasing / Avg. TA TOBIT		**Panel B:** Avg. Leasing / Avg. TA OLS		**Panel C:** Avg. Leasing / Avg. (Leasing + LT Bank debt) TOBIT	
	ME	(p-value)	ME	(p-value)	ME	(p-value)
AQ	*0.067***	*(0.000)*	*0.138***	*(0.018)*	*-2.313***	*(0.000)*
LT Bank debt	-0.025***	(0.000)	-0.260***	(0.000)	Not included	
Size	-0.000	(0.794)	-0.006***	(0.009)	-0.055***	(0.005)
Age	-0.002**	(0.040)	-0.006	(0.194)	-0.066**	(0.019)
Asset tangibility	0.036***	(0.000)	0.217***	(0.000)	-0.270***	(0.000)
Profitability	-0.012**	(0.015)	0.004	(0.831)	-0.097	(0.599)
Z'-score	-0.003***	(0.000)	-0.005***	(0.005)	-0.040***	(0.005)
Past growth	0.008*	(0.073)	0.058***	(0.003)	-0.097	(0.418)
Growth prospects	0.027	(0.161)	-0.182***	(0.009)	1.021	(0.161)
Industry dummies	Included		Included		Included	
Year dummies	Included		Included		Included	
F-stat	13.33***	(0.000)	16.41***	(0.000)	5.86***	(0.000)
N	18,538		4,073		8,114	
McFadden pseudo R^2	0.330				0.034	
R^2			0.376			

Average marginal effects (ME) from tobit and OLS regressions. See Table 4.1 for variable definitions. Standard errors are clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

Figure 4.1: Mean of leasing variables by AQ quintiles



Appendix 4.1

Appendix 4.1: Likelihood of having leasing

	ME	(p-value)
AQ	*0.593***	*(0.000)*
LT Bank debt	-0.008	(0.891)
Size	0.005	(0.382)
Age	-0.015	(0.168)
Asset tangibility	0.200***	(0.000)
Profitability	-0.148***	(0.007)
Z'-score	-0.031***	(0.000)
Past growth	0.047	(0.275)
Growth prospects	0.572**	(0.019)
Industry dummies	Included	
Year dummies	Included	
Wald Chi²-stat	398.4***	(0.000)
N	18,538	
McFadden pseudo R^2	0.074	

Average marginal effects (ME) from probit regressions. *Dependent variable*, *Leasing* = dummy variable taking 1 if there is leasing - 0 otherwise. See Table 4.1 for other variable definitions. Standard errors are clustered at the firm level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively. p-values are reported between brackets.

CHAPTER 5:

GENERAL CONCLUSION

Notwithstanding the distinct research questions, in all individual articles significant effects with respect to the impact of FRQ on (different aspects of) the debt financing of SMEs are encountered. More precisely, it is documented that the FRQ of SMEs affects the cost of their debt and two dimensions of the structure of their debt, i.e., the relative use of long term debt and the relative use of financial leasing. The principal conclusion of this dissertation is therefore that the financial statements of SMEs – if available – are indeed used by and thus relevant for their creditors. In fact, this dissertation and the articles within it provide evidence for the existence of a market demand for high-quality financial statement information on privately-held firms and SMEs and hence challenge the propositions made in widely-cited studies as Hope et al. (2013), Chen et al. (2011) and Ball and Shivakumar (2005). This constitutes the most important academic contribution of this dissertation. On top of that, this dissertation adds to the existing FRQ literature by estimating two-stage debt maturity regressions (second article), by considering the mediating role of fundamental risk in the relationship between FRQ and debt maturity (second article) and by looking into the link between FRQ and financial leasing (third article). It also adds to the SME literature in that its findings demonstrate that SMEs' FRQ not only influences their reliance on bank debt (García-Teruel et al. 2014a) and supplier debt (García-Teruel et al. 2014b) and their reliance on debt overall (Van Caneghem and Van Campenhout), but also influences the cost of their debt (first article), the maturity of their debt (second article) and the relative importance of financial leasing in their balance sheets (third article).

5.1 Summary of the individual articles

5.1.1 First article

Given prior studies by Bharath et al. (2008) and Francis et al. (2005) in which for listed firms a negative association between FRQ and the cost of debt is established, this article examines whether also for SMEs, financial statement data and their quality are considered by creditors when deciding on the interest rate. The rationale in this article is similar to the one in Bharath et al. (2008) and Francis et al. (2005), that is that firms with lower FRQ tend to entail more information asymmetry and thus more risk for their creditors which is expected to raise the interest rate charged by these creditors. Nonetheless, given the fundamental differences between the listed firms in prior work and the SMEs in our work, it is a priori far from certain whether the negative association between FRQ and the cost of debt documented in Bharath et al. (2008) and Francis et al. (2005) for listed firms holds in our SME setting. Therefore, it is argued in this article that this remains an open question which needs to be addressed empirically.

Main findings

The findings in this article highlight that, compared to SMEs with lower AQ, SMEs with higher AQ pay on average lower interest rates on their loans and hence exhibit on average lower costs of debt. This is consistent with higher AQ enabling a more accurate forecast of future cash flows and thus reimbursement capacity. The negative association between SMEs' AQ and these firms' effective interest cost is further not only highly statistically significant but also economically meaningful. That is to say, controlling for a number of firm, industry and time characteristics, the effective interest cost of an SME at the 10th AQ percentile appears to be on average no less than 194.9 basis points higher (on an overall mean of 9.6%) than the effective interest cost of an otherwise similar SME at the 90th percentile.

Specific contributions to the academic literature

This article contributes to the current state of the literature in different respects. To start, by showing that earnings figures with a higher ability to predict future cash flows and thus reimbursement capacity keep down interest rates, it is one of the first to provide empirical evidence for the relevance of FRQ in an SME context. Furthermore, this article adds to prior studies on the FRQ of SMEs (basically Van Caneghem and Van Campenhout 2012), in that it exploits a panel dataset and in that it adopts a continuous, powerful and intuitive FRQ measure that allows to test explicitly for the effect of FRQ.

5.1.2 Second article

The second article is on how the FRQ of privately-held firms affects the maturity of their outstanding debt. The idea is that on the one hand, multiple studies (e.g. Hasan et al. 2012, Bharath et al. 2008, Francis et al. 2005) demonstrated that suppliers of funds price FRQ. In other words, they ex ante adjust price and/or non-price credit terms, in that whereas better FRQ results in more favorable terms, worse FRQ translates into more unfavorable ones: i.e., higher interest rates, shorter loan maturities and more collateral requirements. This said, on the other hand, to the best of our knowledge, there is less empirical research embracing the idea that money lenders may simply refuse to grant funds or may reduce the loan amount to firms that score badly on FRQ (Stiglitz and Weiss 1981). Therefore, in this article, we examine whether there exists a relationship between the FRQ of privately-held firms and the levels of long term debt these firms deploy to finance their business. We focus on the access to long term debt since low FRQ is expected to have more adverse effects for the forecasting and monitoring process in the case of long term debt than in the case of short term debt (García-Teruel et al. 2010, Ortiz-Molina and Penas 2008).

In addition, this article explores whether the relationship between FRQ and debt maturity, if found for privately-held firms, varies with fundamental risk. Consistent with the proposition from the analytical model by Yee (2006) that for listed firms the effect of EQ risk on the equity risk premium amplifies in fundamental risk and with the observation that SMEs tend to involve more fundamental risk than larger privately-held firms (Cole 2013, Van Caneghem and Van Campenhout 2012, Heyman et al. 2008, Dechow and Dichev 2002) we predict that any FRQ effect on the debt maturity structure of privately-held firms will be more pronounced for SMEs than for their larger privately-held counterparts.

Main findings

The principal findings are consistent with a double effect of FRQ on the debt maturity of privately-held firms. Firstly, we show that, in comparison to privately-held firms with lower AQ figures, privately-held firms with higher AQ figures are more likely to have long term debt. In numbers, all else equal, a hypothetical firm that would be able to improve its AQ from the 10^{th} to the 90^{th} AQ percentile in our sample would be able to lift up its likelihood of having long term debt with on average no less than 877.3 basis points on an overall mean of 55.5%. Secondly, AQ also influences the relative importance of long term debt in total debt conditional upon having long term debt in a positive fashion. That is to say, for those privately-held firms that have long term debt, an increase in AQ from the 10^{th} to the 90^{th} percentile is estimated to increase the ratio of long term debt to total debt with 235.0 basis points on average on an overall mean of 13.0%. For both these findings, we also provide some evidence that the magnitude of the reported AQ effects is inclined to be greater for SMEs than for larger privately-held firms. The latter is in line with SMEs involving more fundamental risk than larger privately-held entities and fundamental risk mediating the relationship between AQ and debt maturity.

To end, in an additional analysis it is shown that for all privately-held firms considered, AQ is positively associated with the probability of attracting new long term debt. This implies that privately-held firms with low AQ risk to be rationed out by creditors in the sense that they are more likely to experience difficulties in accessing new long term loans. Also this effect tends to be more sizeable for SMEs than for their larger privately-held counterparts.

Specific contributions to the academic literature

This article adds to the literature by demonstrating that – notwithstanding the setting of privately-held firms is less conducive for high FRQ than the setting of listed firms (Hope et al. 2013, Chen et al. 2011, Ball and Shivakumar 2005) and notwithstanding the general assumption that this may dilute the relevance of FRQ (Chen et al. 2011) – FRQ has a prominent role in the contracting of long term debt by privately-held firms. In addition, this article adds to studies in this domain (basically García-Teruel et al. 2010) by applying a two-step regression approach and by verifying whether fundamental risk acts as a mediator variable in the studied relationship between privately-held firms' FRQ and these firms' debt maturity.

5.1.3 Third article

The third article starts from the observation that lower FRQ by SMEs may provoke a rationing of their credit in that it is likely to restrain their access to the two most important financing sources for SMEs being bank debt (García-Teruel et al. 2014a) and supplier debt (García-Teruel et al. 2014b) and to debt overall (Van Caneghem and Van Campenhout 2012) and is also likely to raise the price they pay for their external funds (first article). What this means is that SMEs with low FRQ have to look for financing alternatives of which financial leasing is a promising and

prospering one (Belgian Leasing Association 2015, Leaseurope 2015, Deloof et al. 2007). Besides studying the unconditional relationship between SMEs' FRQ and the use of financial leasing by these firms, this article also explores whether the FRQ of SMEs affects the importance of financial leasing relative to long term bank debt. The rationale for the latter is that lessors in Belgium have a claim on the leased asset that is superior to the claims of any other group of creditors (even to the claims of bankers that secured their debts), which enables them to provide more credit and/or cheaper credit in conditions with elevated risk where regular creditors are often either unwilling to extend credit or are only willing to do so at high costs (e.g., the other party is an SME with low FRQ).

Main findings

Firstly, the findings from this article demonstrate that, compared to SMEs with lower AQ values, SMEs with higher AQ values are generally able to obtain a larger fraction of their assets base through financial leasing. In economic terms, going from the 10^{th} to the 90^{th} AQ percentile is associated with an increase in the ratio of financial leasing to total assets of 57.0 basis points on average on an overall mean of 1.4%. Secondly, the findings in this article show that SMEs' AQ affects the mix between financial leasing and long term bank debt in that the share of financial leasing in the sum of financial leasing and long term bank debt decreases in function of AQ. Here the differential between the 10^{th} and the 90^{th} AQ percentile in terms of financial leasing to financial leasing and long term bank debt is on average 1,642.2 basis points on an overall mean of 31.8%.

Specific contributions to the academic literature

To the best of our knowledge, this article is the first to study financial leasing in relation to FRQ. As such, it complements Beatty et al. (2010) that is on the link between FRQ and operating leases

for listed firms. Moreover, even though particularly for SMEs leasing has become an increasingly important financing source, this article is as far as we know one of the few studies to look into the leasing practices of SMEs. Another interesting feature of this article is that it considers European leases that are subject to other regulations than the US leases that have been studied in most prior work.

5.2 Implications for practice

On top of contributing to the academic literature in various ways, the findings in this dissertation also prove to be valuable for practitioners. SME managers can learn from this dissertation that investments in high-quality financial reporting systems may be worth the effort. That is to say, given that higher FRQ has the potential to reduce the relatively large levels of information asymmetry that exist between SMEs and their creditors (Berger and Udell 1998), higher FRQ may entail important economic benefits for SMEs. More specifically, this dissertation shows that higher FRQ may facilitate SMEs' debt financing, in that it could enlarge the access to debt and cut its costs. In contrast, to the extent that opportunistic earnings management deteriorates FRQ, this may have the exact opposite effects, i.e., debt gets more difficult and more expensive to access.

Also for European regulators this dissertation is important for it shows that SME financial statements are actually used by creditors in making informed credit decisions. If, within the context of the Small Business Act, one would decide upon new standards that involve less reporting requirements for SMEs this may actually turn out to be counterproductive in that instead of supporting SMEs, this may hamper their debt financing.

5.3 Limitations and avenues for future research

A first limitation of this dissertation is that firm-level data are to be used due to the unavailability of loan-level data. Whilst this permits to exploit large longitudinal datasets, it would still be interesting to validate the results in this dissertation by means of loan-specific data given the advantages of loan-specific data over firm-specific data. Firstly, loan-specific information would allow a more careful definition of a couple of variables in this dissertation. In particular, using loan-specific information, the cost of debt, maturity and collateral variables from the first and second article could be more precisely defined. Secondly, information on individual loans would permit a further extension of the set of eligible control variables with variables related to for example loan amount and personal guarantees.

A second limitation is that although AQ has the advantage to be a direct and precise measure of FRQ, large amounts of data are needed for its computation, which induces important drops in sample size in each of the three articles in this dissertation. As a result, the estimation samples may be somewhat biased towards elder, larger and financially healthy firms, which may limit the external validity of the results. Future research could try to use FRQ measures that impose less severe data requirements and verify whether this impacts the results reported in this dissertation.

A third limitation applies specifically to the third article and stems from the fact that in Belgian financial statements no separate information is available on operating leases. However, given that a lot of operating lease contracts closely resemble regular renting contracts, adding operating leases to the estimation sample of the third article is arguably not very relevant.

An interesting avenue for future research could be to explore the institutional differences between countries to deepen our understanding of the relationship between SMEs' FRQ and SMEs' debt financing and to learn more about how country-level regulation can influence this relationship.

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