Capital structure of UK SMEs: an integrated understanding

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Abstract: This study contributes with an integrated understanding of SME capital structure patterns at the nexus of internal (firm-specific) and external environment determinants. The hypotheses draw on pecking order theory (POT), agency theory, and business cycle theories, and estimates are obtained from a data panel of 424 UK SMEs, over a ten-year period. Furthermore, the findings and discussion draw on both static and dynamic models of capital structure. The results between the static and the dynamic model are qualitatively similar, illustrating that firms change their capital structure over time, which is consistent with the POT and agency theory. In contrast to previous results on capital structure choices, the present study reveals that size relates to long-term debt borrowing only in the short-term, and SME growth is not positively linked with gearing ratios. The findings also offer evidence which support that macroeconomic conditions have a nonlinear, convex relationship with the gearing ratios of the sample firms.

Keywords: SMEs; capital structures; SME financing; business cycle; firm-specific characteristics; UK.

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1   Introduction

One of the most important decisions of the firm is that of its capital structure, which involves the options used to finance firm assets and the specific mixture of debt and equity accompanying this decision (Titman and Wessels, 1988). The capital structure does not only reflect the means of financing that a firm chooses to employ, but it can also affect its ownership control and financial viability (Agrawal and Nagarajan, 1990; Cassar and Holmes, 2003). Increasingly, capital structure decisions are acknowledged to be influenced by both firm-specific characteristics (for example: firm size, age, and

profitability) and external environmental conditions (for example: country financial conditions, market considerations) (Deesomsak et al., 2004; Masiak et al., 2017; Moritz et al., 2016; Ovtchinnikov, 2010).

Most of the work in this crucial area of research has focused on the large publicly listed corporations, and to a lesser extent, on the capital structure practices of smaller-sized firms (Degryse et al., 2012). SMEs share unique characteristics (Bannier and Zahn, 2012), which can make their capital structure choices different from the choices made by larger firms (Dewaelheyns et al., 2017; Mac an Bhaird and Lucey, 2010). SMEs usually exhibit close links between ownership and management (Ang, 1991), they operate in a relatively limited number of products and markets, and they do not have the economies of scale already realised by large firms (Majocchi et al., 2005). This is likely to lead to a low level of retained earnings for SMEs (Conte and Vivarelli, 2014; Jõeveer, 2013), which triggers a need to raise funds externally, and particularly through debt financing (FSB, 2012; Storey, 1994). Compared to large firms, SME managers frequently face larger barriers in accessing long-term debt financing due to the lack of substantial fixed asset collateral (Chittenden et al., 1996). Consequently, their decisions may be restricted to the use of the more expensive short-term debt (Michaelas et al., 1999). In addition, given their reliance on debt finance, SME capital structure decisions may also be more sensitive to changes in the business cycle (Masiak et al., 2017). A financial crisis, for example, which leads to lower availability and higher cost of debt finance (Duchin et al., 2010; Mac an Bhaird, 2013), can create further obstacles for SMEs in their endeavours to source external debt (Balios et al., 2016; Benkraiem, 2016; Moritz et al., 2016). Evidence from the 2008 global financial crisis illustrates a deterioration in the relationship between small firms and banks, as well as the introduction of additional financing restrictions for SMEs (Benkraiem, 2016; Ferrando and Griesshaber, 2011; Lee et al., 2015). Thus, given the reliance on external debt and the higher sensitivity to economic conditions, SME capital structure choices may differ from the decisions taken by larger firms.

Studies have largely drawn on pecking order (Myers, 1984), agency (Jensen and Meckling, 1976), and trade-off theories (McNamara et al., 2017; Sardo and Serrasqueiro, 2017) in order to explain shifts on SMEs' capital structure choices (see for example, Mac an Bhaird and Lucey, 2010; Sogorb-Mira, 2005). These theories allow micro-level explanations on capital structure decisions, which are primarily influenced by firm-specific characteristics (Banga and Gupta, 2017; Pacheco, 2016; Uyar and Guzelyurt, 2015). Despite the relevance of economic fluctuations in small firm financing (Masiak et al., 2017), economic conditions in the external environment are yet to be sufficiently linked to SME capital structure preferences. In the backdrop of the 2008 financial crisis, the interaction between macro-economic fluctuations (known as the business cycle) and the financing choices of the firm, gain interest (Fosberg, 2012; Proença et al., 2014). Consequently, in this study the pecking order theory (POT) (Myers, 1984), the agency theory (Jensen and Meckling, 1976), and monetary business cycle theories (Chari et al., 2000; Šustek, 2011) are being conjoined in order to research SME capital structure preferences at the nexus of internal (firm-specific) and external environmental influences. Potentially, such a focus can allow an integrated understanding of the capital structure behaviour of SMEs.

The impact of (selected) firm-specific characteristics and economic fluctuations (that is 'the business cycle') is tested on UK SME capital structure preferences. SMEs are the backbone of the UK economy, so they have a crucial role in driving economic growth (Dana, 2018). They account for almost 50% of private sector employment and a 33% of private sector turnover (Shehata et al., 2017). The UK encompasses a well-developed financial market system, which induces SMEs to use a broad range of external financing sources, such as trade credit and equity funding (Moritz et al., 2016). However, maintaining an open market system, makes the UK economy and its business sector more sensitive to global economic fluctuations (Gilpin, 2018; Thomas et al., 2010). For instance, the UK was amongst the first to be influenced by the 2008 Great Recession (Hodson and Mabbett, 2009; Thomas et al., 2010), leading to a deterioration of the relations between firms and banking institutions (Cowling et al., 2012; Durkin et al., 2013), as well as further difficulties in accessing external financing (Cowling et al., 2016, 2012). Given the maturity of the market, the financing options and behaviour of SMEs, including the sensitivity to economic fluctuations, the UK context becomes ideal in investigating the influences of firm characteristics and the business cycle on SME capital structure choices.

The paper contributes to the literature on SME capital structures in several ways. First, this study contributes to the field of SME capital structures through an integrated understanding stemming from both the internal (firm-specific) and external environmental influences. Studies so far have focused on firm-specific determinants of SME capital structures (Banga and Gupta, 2017; Nunes and Serrasqueiro, 2017), while largely ignoring influences stemming from the external environment. Scholars increasingly acknowledge that capital structure choices are a product of the firm's internal and external environmental conditions (Deesomsak et al., 2004; Masiak et al., 2017; Moritz et al., 2016). By combining the two sources of influences together, the present study sets a roadmap for an integrated understanding of SME capital structure choices. Second, the present study contributes theoretically by drawing on a blend of micro-level and macro-level theoretical lenses to explain SME capital structure choices. A recent bibliometric review by Martinez et al. (2019) reveals the absence of micro and macro-level theoretical blending in the field of SME capital structures. Scholars in the field draw primarily on POT, trade-off, and agency theories, which focus on the micro-level, and specifically on firm-specific determinants of SME capital structure choices. Third, this study offers new insights on the links between business cycle fluctuations and SME capital structure preferences, which have not been sufficiently explored to date (Martinez et al., 2019). Studies on business cycle influences over capital structure choices have focused on larger, mainly publicly listed firms (see for example, Bandyopadhyay and Barua, 2016; Erel et al., 2012). The present study illustrates that macroeconomic conditions have a nonlinear, convex, relationship with both short-term and long-term debt SME financing. Fourth, drawing on the UK SME context, the findings shed light on SME capital structure behaviour, which is not fully aligned with existing evidence on SME capital structure decisions (see for example, Chittenden et al., 1996; Trinh et al., 2017; McNamara et al., 2017). The findings suggest that larger SMEs do not consistently prefer long-term debt as a financing option, while SME growth is not positively linked with gearing ratios as illustrated in previous work. This meets the call to consider the country-context when researching SME capital structure choices (Mac an Bhaird and Lucey, 2014).

This paper is structured as follows: the next section draws on POT, agency, and monetary business cycle theories to formulate the study's hypotheses. Then, the methods, estimation procedures, and empirical results are discussed. Following the discussion of the findings, the paper demonstrates the study's contributions, highlighting implications for practice, policy, and future research.

2 Theory of capital structure and formulation of hypotheses

2.1 Overview

Capital structure theories have their foundations on the seminal work of Modigliani and Miller (1958) who suggested that firm financing choices depend on parameters determining the costs and benefits associated with debt and equity financing (Titman and Wessels, 1988). Developments in this field reveal the influence of a number of quantifiable factors on capital structure choices of firms, including firm size and age (Abor and Biekpe, 2009; Eriotis et al., 2007), asset structure (Abor and Biekpe, 2009; Michaelas et al., 1999), firm profitability (Cassar and Holmes, 2003; Ozkan, 2001), ownership/managerial characteristics (Agrawal and Nagarajan, 1990; King and Santor, 2008), state tax benefits (Modigliani and Miller, 1963), agency costs, and information asymmetries (Jensen and Meckling, 1976; Myers, 1977, 1984). Amidst the absence of a single unifying theory of capital structure drivers (Myers, 2001), firm financing choices are increasingly acknowledged to lie alongside a continuum of firm-specific and external environment-specific determinants (Deesomsak et al., 2004; Masiak et al., 2017; Michaelas et al., 1999). It is on the nexus of these determinants that the present study focuses in order to explore influences and shifts on SME capital structure choices.

SME capital structure behaviour is acknowledged to differ from the capital structure choices of larger firms (Martinez et al., 2019; Van der Wijst, 1989). Studies illustrate that SMEs prefer, especially when younger, to finance their activities through internal sources of finance (Berger and Udell, 1998; Trinh et al., 2017). A number of determinants impact the capital structure preferences of SMEs, including the personal preferences of entrepreneurs (Barton and Gordon, 1987), the growth history of the firm (Thornhill et al., 2004), firm age and size (Mac an Bhaird and Lucey, 2010), firm profitability (Van Caneghem and Van Campenhout, 2012), type of industry (Thornhill et al., 2004), and country context (Hall et al., 2004). Additionally, SMEs are more likely to experience restrictions in accessing external funds due to problems of information asymmetry (Van Caneghem and Van Campenhout, 2012) and lack of substantial asset collateral (Mac an Bhaird and Lucey, 2010). Studies on SME capital structure have largely drawn on corporate finance theories to provide explanations on the financing preferences of SMEs. A systematic review on SMEs capital structure by Martinez et al. (2019) illustrates the preference towards the POT, the agency theory, and the trade-off theory. The preference towards these theories has led to an overreliance on firm-specific determinants (such as age, size, growth rate, and profitability) to explain SME capital structure choices (see for example, Briozzo et al., 2016; Yazdanfar and Öhman, 2015). While capital structure decisions have also been identified to be influenced by external environment determinants (Ross et al., 1999) such as economic fluctuations (Bandyopadhyay and Barua, 2016; Drobetz et al., 2015), this is a dimension which has not been sufficiently linked to SME capital structure choices (Martinez et al., 2019).

The present paper makes a joint use of pecking order, agency, and monetary business cycle theories to research the SME capital structure preferences at the nexus of firm-specific and external environmental determinants. The POT and agency theories are preferred to the traditional static trade-off theory (Myers, 1984; Shyam-Sunder and Myers, 1999), due to their capacity to explain shifts in firm capital structure choices, whilst also considering past financing preferences (De Jong et al., 2011), changes in the level of information asymmetries (Frank and Goyal, 2003) and the unfolding firm-bank relations (Gaud et al., 2005). The consideration of the monetary business cycle theory (Chari et al., 2000; Šustek, 2011) is made to investigate the importance of theory-corroborated factors affecting the firm's choice of financing in two different economic periods; during a period of prosperity and one of austerity. Further, these three theories were chosen due to the fact that they can articulate the idiosyncratic nature of SMEs, which exhibit different governance characteristics from large public corporation. The subsections that follow draw on these theories to formulate the study's hypotheses.

2.2   *POT-informed hypotheses*

POT is particularly relevant to SME capital structure (Myers, 1984) as it rationalises SME financing choices on the grounds of information asymmetries arising between the owner-managers and the outside providers of finance. SMEs are predominantly closely held businesses where their owners are usually their managers too, who have very little incentive to disclose managerial information beyond that which is legally mandated. This suggests that information asymmetries are even greater in SMEs making their resort to external means of finance a rather costly enterprise (Myers, 1984; Myers and Majluf, 1984).

The information asymmetry premise allows POT to predict that SME owner-managers will source capital in the following order: Owner-managers will first utilise their internally generated earnings to finance investments, if additional funds are needed they prefer short-term debt, and if this is not sufficient they will opt for long-term debt. External equity will be their least preferred option since it is the most expensive form of finance (Myers, 1984). The owner-managed governance of SMEs makes owners inherently resistant to the outside intrusion of potential new equity holders, and hence, unwilling to share decision making and control (Cosh and Hughes, 1994; Daskalakis and Psillaki, 2008). Therefore, owner-managers of SMEs would prefer internally generated funds to those originating from external sources; and in case these are insufficient, they would prefer debt to equity since debtors are less intrusive (and less costly) than investors. Extant literature reports that "only a small number of firms use external equity" (Fitzsimmons and Douglas, 2006; Sogorb-Mira, 2005) and that SMEs "do not consider raising external equity", operating under a constrained pecking order (Howorth, 2001; Seet et al., 2010).

It is under a constrained pecking order perspective that this study formulates its hypotheses. The focus is on firm-size and firm-profitability to construct the study's hypotheses under a POT perspective. Size and profitability are commonly used in studies drawing on POT theory, and have been found to explain a firm's pecking order behaviour in obtaining external funds (Chittenden et al., 1996; Frank and Goyal, 2003). Firm size determines the relationship between funds needed for investments and internally generated funds (Chittenden et al., 1996; Hutchinson, 1995; Mateev et al., 2013). Studies justify the role of firm size on the firm's financing choices, from both the perspective of

SME owners and lenders. As far as SME owners are concerned, they prefer to finance their firm with internally generated funds because lenders demand more reassurances, and consequently impose higher costs to provide finance. Higher borrowing costs arise because smaller sized firms will, on average, have insufficient assets to put as collateral, particularly during the start-up phase (see Mac an Bhaird and Lucey, 2010), and will also be more vulnerable to competition. Such size-driven constraints affect SMEs' capacity to generate retained profits to pay off their debts, particularly during their early operating stages. This suggests that SMEs, as smaller firms, have access to less debt capital (Cassar, 2004).

Empirical studies report, therefore, a positive sign between size and leverage (Booth et al., 2001; Frank and Goyal, 2003). An interesting departure from these findings is the case of Germany. Rajan and Zingales (1995) find a negative relationship between size and debt, which they attribute to the bankruptcy laws of Germany, which provide better protection to creditors relative to other countries. Considering the aforementioned arguments, the following hypotheses are formed:

H1a   Firm size is positively related to short-term debt.

H1b   Firm size is positively related to long-term debt.

As an SME grows it will generate retained profits. Therefore, it will prefer to finance new projects via internal rather than external funds (Cole, 2013; Daskalakis and Psillaki, 2008). Higgins (1977, 1981) argue that if a firm "is unable or unwilling to resort to external finance then there exists only one growth rate in sales which is consistent with certain operating and finance ratios", suggesting that such firms depend their growth initiatives on the level of their generated retained profits. Evidently, this preference for internal financing is contingent on the firm's capacity to accumulate retained profits as it grows. SMEs, however, despite their innate inclination to internal finance, are more likely to experience situations where their financing needs exceed their sustainable growth rate and will have to seek external finance. Such arguments are consistent with POT, which posits that when growth is an objective of the firm, the relationship between profitability and debt is an inverse one; a profitable firm will be able to meet demands for higher growth rates with internally generated funds.[1] On the basis of the above, the following hypotheses are formulated:

H2a   Firm profitability is negatively related to short-term debt.

H2b   Firm profitability is negatively related to long-term debt.

2.3   Agency theory-informed hypotheses

Agency theory in the context of SMEs centres on agency conflicts that emerge because of moral hazard. Agency conflict between owners-managers and lenders involves the former striving to maximise firm value by investing borrowed capital in higher return and inevitably higher risk projects, whereas the latter focus on safeguarding their investment (Hand et al., 1982). Hence, SME owners are willing to take risks that lenders find particularly distressing (Ang, 1992). This distress is due to information asymmetry, which is further exacerbated in SMEs by the lax reporting requirements they are subjected (Carbo-Valverde et al., 2009; Mac an Bhaird and Lucey, 2010).

The study focuses particularly on firm growth potential, firm asset structure, and short-term liquidity, which are determinants that have been largely linked with agency theory explanations of a firm's financing choices (see for example, Chechet and Olayiwola, 2014; Eriotis et al., 2007; Van Caneghem and Van Campenhout, 2012). Studies drawing on agency theory, illustrate a negative relation between growth and long-term debt, explaining that due to agency costs firms prefer to finance their growth through internal means (Eriotis et al., 2007; Myers, 1977). While this is evident for corporate firms, smaller enterprises face relatively limited internal equity and assets that can be used as collateral (Mishra and McConaughy, 1999; Watson and Wilson, 2002). This makes growth financing through internal sources very difficult. As a consequence, SME firms with a strong growth tempo are inevitably expected to rely on external debt (Daskalakis and Psillaki, 2008; Sogorb-Mira, 2005).

In particular, there is evidence that smaller, fast growth companies with insufficient internal equity rely necessarily on external finance (Stanworth and Curran, 1976) with the caveat that firms in high risk sectors and inadequate collateralisable assets rely more on external equity (Cressy and Olofsson, 1997; Mac an Bhaird and Lucey, 2010). At the same time, Romano et al. (2001) report that small businesses in low growth sectors rely more on debt financing as well. In such cases, firms might face difficulties in raising long-term capital, and thus will resort to short-term debt (Johnsen and McMahon, 2005; Mac an Bhaird, 2010). Considering the above, it is expected that smaller firms will resort to external debt (short and long-term) to finance their growth potential.

Thus, the following hypotheses are formed:

H3a   Firm growth potential is positively related to short-term debt.

H3b   Firm growth potential is positively related to long-term debt.

Agency theory ascribes agency costs to adverse selection and moral hazard reasons. In SME-lending, adverse selection occurs when the credit provider is not sure which firm is risky and which is not, which forces them to charge the same average price. Moral hazard occurs when credit receivers direct borrowed capital to usually riskier investments (Voordeckers and Steijvers, 2006). A safeguard for SME lenders to adverse selection and moral hazard, and hence, a way for SMEs to attract less expensive debt financing, is collateral (Stiglitz and Weiss, 1981; Kon and Storey, 2003). It is, therefore, expected that SMEs with available collateral will find it easier to raise loan capital and will have a higher debt to equity ratio than firms with less collateralisable assets. Empirical studies positively link debt to the presence of assets (Daskalakis and Psillaki, 2008) confirming that asset structure (ratio of fixed to total assets) is indeed a principal determinant of capital structure, even for firms that are reporting healthy cash flows (Manove et al., 2001). However, Hall et al. (2004), Sogorb-Mira (2005) and Johnsen and McMahon (2005) report on an inverse relationship between short-term debt and fixed assets, indicating a firm preference for asset backed long-term loans (see Chittenden et al., 1996; Jordan et al., 1998; Michaelas et al., 1999) that are cheaper than short-term financing.

Considering the aforementioned, a firm with a higher amount of fixed assets in relation to its total assets is more likely to seek long-term debt due to available collateral to pursue this 'cheaper' financing form. In contrast, a firm with a lower proportion of fixed assets to total assets is likely to pursue the less demanding in terms of safeguards, yet more costly, short-term debt. This leads to the following hypotheses:

H4a   Firm asset structure is negatively related to short-term debt.

H4b   Firm asset structure is positively related to long-term debt.

SMEs lacking adequate collateral to seek long-term financing when internal funds are insufficient, may routinely resort to trade credit (Abdulsaleh and Worthington, 2013; Fatoki and Odeyemi, 2010). Trade credit allows SMEs to control their cash flows better and strengthens their position to raise external capital when the need arises (Abdulsaleh and Worthington, 2013). However, a small business operating on trade credit might, in turn, find it difficult to receive timely payments from debtors who may be operating on trade credit as well (Paul and Wilson, 2007). Hence, as Chittenden and Bragg (1997) argue, for smaller firms to meet their obligations they might consider short-term bank borrowing as well. Previous studies suggest that trade credit and short-term bank borrowing can be both substitutes and complementary to one another (Kling et al., 2014).

According to POT, a growing firm will pursue short-term financing sequentially, after exhausting possibilities for internal financing (Myers, 1984). A firm lacking money, will postpone payments (will operate trade credit), and if trade credit is not enough to make it liquid, will pursue short-term loans (at a high cost of capital) (Kling et al., 2014). It follows that the higher the short-term liquidity (current assets over current liabilities > 1), the less the need for a firm to seek short-term debt. In addition, high short-term liquidity of the firm means that the portion of current assets which exceeds current liabilities is financed by long-term sources of finance (long-term debt or equity/retained earnings). Since equity financing is more expensive for SMEs, the higher the firm's short-term liquidity the more likely it is to have resorted to long-term debt (that is to have financed a certain portion of its current assets with longer-term debt). To this end, a positive relationship can be observed between short-term liquidity and long-term debt. Considering the aforementioned, the following hypotheses are formed:

H5a   Short-term liquidity is negatively related to short-term debt.

H5b   Short-term liquidity is positively related to long-term debt.

2.4   *Business cycle-informed hypotheses*

Business cycle refers to the familiar ups and downs of economic activity (Pearce and Michael, 2006). Economic fluctuations have a pervasive influence on business activity (Cochrane, 1991; Pearce and Michael, 2006), including the choices and options of firms in financing their activities (Bandyopadhyay and Barua, 2016; Drobetz et al., 2015).

Yet, the business cycle effect has been tested in relation to larger corporations (for example, Bandyopadhyay and Barua, 2016; Erel et al., 2012). Little is known on the impact of the business cycle on the capital structure choice of SMEs (Martinez et al., 2019). A recent bibliometric review by Martinez et al. (2019) illustrates that business cycle theories have not been sufficiently used to explain SME capital structure behaviour, compared to other established theories such as the POT, the agency theory, and the trade-off theory. This creates a myopic understanding of SME capital structure determinants, which centres primarily on internal (firm-specific) determinants and at lesser extend on influences stemming from the external environment in which the SME is embedded.

The present paper capitalises on this gap, drawing on the monetary underpinnings of the business cycle (Chari et al., 2000; Šustek, 2011) to examine the impact of (external) economic fluctuations on SME capital structure. Monetary underpinnings of the business cycle refer to money supply and credit conditions, which are fluctuating with time and lead to cyclical changes in the degree of economic efficiency and level of aggregated output (Cooley and Hansen, 1989; Gavin and Kydland, 1999). Money and credit-related shocks, which are linked to economic recessions (Christiano and Eichenbaum, 1995; Kashyap et al., 1994), have a major impact on firm sales and performance (Bernanke et al., 1999; Cowling et al., 2012). A recession is often accompanied by falling prices, decreases in company and consumer spending, high unemployment, and a higher customer willingness to switch to other suppliers (Pearce and Michael, 2006). This is likely to lead to an increase of financing constraints for the firm (Drobetz et al., 2015; Kashyap et al., 1994).

Evidence shows that smaller firms (Covas and Den Haan, 2012; Gertler and Gilchrist, 1994), are more pro-cyclical, meaning that they are more likely to be negatively influenced during economic recessions and periods of limited credit availability (Cowling et al., 2012, 2015). Studies illustrate that in the occurrence of an economic recession, SMEs are likely to underperform (Fotopoulos and Louri, 2000; Smallbone et al., 2012), facing reduced sales and limitations in accessing key resources (Cowling et al., 2012), and for this reason their survivability is at a stake (Smallbone et al., 2012). In the UK, the effects of the Great Recession of 2008 were severe for SMEs. Following the 2018 recession, four in ten UK SMEs experienced a fall in employment, while half of them experienced a sales reduction (Cowling et al., 2015).

The availability of finance is a key resource limitation for the SME during an economic recession (Cowling et al., 2012, 2015). The British Bankers Association highlights that small firm borrowing declined by 14% immediately after the recession of 1991. Evidence from the 2008 recession emphasises the changes in SMEs willingness and ability to borrow funds (Bank of England, 2011; Cowling et al., 2015, 2016; Dong and Men, 2014). Small business owners became more cautious and conservative of additional debt borrowing (Bank of England, 2011). At the same time, banks became more unwilling to finance smaller firms, especially ones with a higher risk rating (Cowling et al., 2016; Masiak et al., 2017). A report by the Bank of England (2011) finds that an economic recession makes small businesses rely more on their savings, therefore shifting their capital structure mix towards internal funding. Further, information asymmetries in SME-lender relationships can be greater during a crisis, as is also the time required for such relationships to mature (Berger and Udell, 1995) and yield the needed provision for debt finance.

It is therefore, suggested that in periods of economic downturn smaller, growing firms will have more difficulty in raising external capital. Considering the aforementioned the following hypothesis is formed:

H6   Firm short and long-term debt is pro-cyclical; it is positively related to the business cycle.

Table 1 summarises the hypotheses set forth in this section.

Table 1 The various determinants of capital and their expected sign

Determinants	Relationship to gearing	
	Short-term	Long-term
Firm characteristics		
Size	+	+
Profitability	–	–
Growth potential	+	+
Asset structure	–	+
Short-term liquidity	–	+
Industry effect	Varied	Varied
Economic environment		
Business cycle	+	+

3 Methods and data

3.1 Data

Data were drawn from the FAME database of Bureau Van Dijk (BvD), which is exclusive to firms in the UK and Ireland. FAME contains data on 3.8 million companies, 2.8 million of which are in detailed format. Data were drawn following a substantial refinement of the available firms to obtain a sample that meets the study's objectives and the European Union's definition of SMEs. According to the EU an SME is any company that employs less than 250 employees, distinguished into medium-sized (50–249), small (10–49) and micro (<10) (European Commission, 2003). The sample contains firms from all three strata of the SME definition. Table 2 depicts the main criteria for classifying SMEs according to their size.

Table 2 EU definition of SMEs, converted to british pounds

Company category	Employees	Turnover	or	Balance sheet total
Medium-sized	<250	≤£40.82 m		≤£35.11 m
Small	<50	≤£8.16 m		≤£8.16 m
Micro	<10	≤£1.63 m		≤£1.63 m

The selection of sample firms was further refined by considering the independence indicator of BvD. This indicator categorises firms according to their degree of independence, assigning values that range from *A+* to *U* with the most independent firm receiving the highest score: *A+*. The sample used in this paper is limited to companies scoring at least a *B-*so that only privately held companies are included. In addition, the study's interest focused on manufacturing firms since their financial needs, and therefore their capital structures, are different from other industries (Hall et al., 2000). Choosing only manufacturing SMEs, with an independence indicator of at least *B-*yielded a balanced panel of 424 firms over a ten-year period.

Table 3   Sample balance sheet of 424 medium sized companies

	2004–2008	Common size	2009–2012	Common size
Fixed assets				
Tangible	7,391	38.72%	6,961	37.32%
Intangible	754	3.95%	509	2.73%
Total fixed assets	8,145	42.67%	7,470.40	40.05%
Current assets				
Stock and work in progress	3,211	16.82%	3,218	17.25%
Trade debtors	3,545	18.57%	3,698	19.82%
Bank and deposit	2,100	11.00%	2,355	12.63%
Other current assets	1,839	9.63%	1,714	9.19%
Investments (current assets)	248	1.30%	199	1.07%
Total current assets	10,942.53	57.33%	11,184.18	59.95%
Current liabilities				
Trade creditors	2,643	13.85%	2,620	14.05%
Short-term loans and overdrafts	1,781	9.33%	1,352	7.25%
Total other current liabilities	2,123	11.12%	2,014	10.80%
Total current liabilities	6,547.33	34.30%	5,986.72	32.09%
Long-term liabilities				
Long-term debt	2,677	14.02%	2,017	10.81%
Total other long-term liabilities	497	2.60%	176	0.94%
Provisions for other	654	3.43%	403	2.16%
Pension liabilities	1	0.00%	322	1.73%
Balance sheet minorities	79	0.42%	76	0.41%
Long-term liabilities	3,908.63	20.48%	2,993.98	16.05%
Shareholders' funds				
Issued capital	555	2.91%	499	2.67%
Total reserves	8,076	42.31%	9,175	49.18%
Share premium account	536	2.81%	451	2.42%
Revaluation reserves	578	3.03%	634	3.40%
Profit (loss) account	6,688	35.04%	7,853	42.10%
Other reserves	274	1.43%	236	1.27%
Shareholders' funds	8,631.25	45.22%	9,673.89	51.86%

Note: Figures are in £'000s.

To enable the observation of changes in line with the objective of the study to incorporate the effects of the business cycle in the leverage preferences of SMEs, data were grouped into two sub-periods, namely: the 'pre-crisis' from 2004 to 2008, and the 'crisis' from 2009 to 2012.[2,3] Table 3 summarises the changes in the balance sheet structure of the sample firms. Furthermore, Table 3 shows the common size balance sheet for each sub-period to make the comparison easier. A read of the table demonstrates that the

financing portion of the balance sheet of the sample firms is indicative of the POT, even during the recent financial crisis. Owner-managers of SMEs prefer using internally generated funds, then utilise short-term debt, followed by long-term debt, and finally, equity.

3.2 Definition of variables

Both dependent and independent variables are described in Table 4. The dependent variables are leverage ratios, namely: short and long-term debt financing expressed as a percentage of total assets. Short-term financing is comprised of overdrafts and bank loans expected to be paid off in less than a year, while long-term financing is comprised of bank loans expected to be paid off in a period beyond the year. The independent variables of the study are employed to test the hypotheses formulated in the previous section and are defined by proxies. A proxy for size is the natural log of the firm's total assets, and for profitability the percentage change in operating profits. Asset structure and short-term liquidity are proxied by the ratio of fixed to total assets and by the ratio of current assets to current liabilities (current ratio) respectively. The proxy for the business cycle is the percentage change in GDP. Finally, the study uses two dummy variables to capture the industry and year effects respectively.

Table 4   Variables used and their proxies

Variable	Proxy	Previous studies drawing on these ratios
Dependent		
ST debt ratio	Ratio of short-term bank loans and overdrafts to total assets	Mateev et al. (2013), Michaelas et al. (1999) and Sogorb-Mira (2005)
LT debt ratio	Ratio of long-term debt to total assets	Mateev et al. (2013) and Sogorb-Mira (2005)
Independent		
Size	Natural log of total assets	Bopaiah (1998) and Cavalluzzo and Cavalluzzo (1998)
Profitability	Operating income before depreciation to total assets	Mac an Bhaird and Lucey (2010), Thornhill (2006) and Voulgaris et al. (2002)
Growth potential	Ratio of intangible assets to total assets	Michaelas et al. (1999)
Asset structure	Ratio of fixed assets to total assets	De Miguel and Pindado (2001), Mateev et al. (2013), Michaelas et al. (1999), Pindado et al. (2006) and Van der Wijst and Thurik (1993)
Short-term liquidity	Ratio of current assets to current liabilities	De Jong et al. (2008), Mateev et al. (2013) and Voulgaris et al. (2002)
Business cycle	Percentage change in gross domestic product	Hansen and İmrohoroğlu (2009) and Holton et al. (2014)
Industry	Dummy variable that captures the industry effects	
Year	Dummy variable that captures the year effects	

Table 5 Correlation matrix of model variables

	LT debt	ST debt	Profitability	Growth potential	Size	Asset structure	Liquidity	Business cycle
LT debt	1							
ST debt	0.0930***	1						
Profitability	–0.0259	–0.0728***	1					
Growth potential	0.221***	–0.00514	0.0420**	1				
Size	0.267***	–0.0793***	–0.0518***	0.161***	1			
Asset structure	0.386***	–0.0114	–0.00492	0.239***	0.419***	1		
Liquidity	0.0635***	–0.256***	–0.0360**	–0.00337	0.235***	–0.198***	1	
Business cycle	0.003	0.0235	0.0542***	0.00634	–0.0108	0.00394	–0.0337*	1

Notes: *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.

A Pearson product moment coefficient (see Table 5) exercise was carried out to assess the degree and direction of the correlation between the independent variables. Table 5 demonstrates that several independent variables are correlated at the 0.01 level of significance, showing evidence against the H_o of no correlation. However, the correlation values are moderate, showing that first-order collinearity among the independent variables is not high. Moderate correlation values, however, preclude neither collinearity, nor multicollinearity (Cameron and Trivedi, 2005). For this reason, the study resorted to tolerance and variance inflation factors (VIF) to further measure the potential for multicollinearity among the independent variables (Kumari, 2008; Murtagh and Heck, 2012). Analysis of tolerance values and VIFs indicates no multicollinearity issues.

3.3   Estimation method

This study uses panel data to analyse the hypotheses formulated above. Panel data are advantageous because they are capable to accommodate for unobserved heterogeneity among the variables, have more degrees of freedom that lead to better estimates, and they can identify and measure effects that are not detectable in cross sectional or time series data (Baltagi, 2008; Hsiao, 2003; Wooldridge, 2010).

To fully investigate the effects that the independent variables have on the leverage ratios of the firms, two estimation models were considered. In the first instance, a static model was used to make the results comparable with extant literature (Michaelas et al., 1999; Frank and Goyal, 2003; Mac an Bhaird and Lucey, 2010). Considering, though, that a static model does not capture the influence that previous levels of leverage have on their current levels, in other words, in the presence of serial correlation (Bond, 2002), a dynamic model was also considered (Mateev et al., 2013). The core argument in using a dynamic model is that the determinants of the debt finance preferences of firms should not be examined solely based on how their contemporary values affect firms' leverage decisions, but also how previous realisations of the dependent variable influence their contemporary manifestations. Dynamic models recognise that past realisations of the dependent variable have explanatory power (Baltagi, 2008).

The static model was estimated via a fixed effects (FEs) estimator, whereas the dynamic model via a GMM estimator. The FEs estimator eliminates endogeneity, which is assumed to be firm specific, by subtracting the corresponding individual means (Cameron and Trivedi, 2009). The GMM estimator requires that a linear function connects the dependent variable to the independent, and that the lagged dependent variable is also in the right-hand side of the equation as an independent variable (Roodman, 2009). However, introducing past realisations of the dependent variable in the equation, introduces correlation between $y_{i,t-1}$ and the FEs in the error term, which is known as the dynamic panel bias (Nickell, 1981). To deal with potential problem of endogeneity, the Arellano and Bover (1995) and Blundell and Bond (1998) system GMM estimators have been used. The GMM estimator of Arellano and Bond (1991) removes the bias by first differencing the equation and, thus, removing the FEs from the equation, and with them endogeneity. The Arellano and Bover (1995) and Blundell and Bond (1998) system GMM estimators use the first difference equation of Arellano and Bond (1991) together with the original equation (system), thus increasing the number of instruments available and increasing efficiency (Roodman, 2009).

The static model, which is employed in the present study, assumes the form of:

$$y_{it} = x_{it}'\beta + u_i + v_t + \epsilon_{il} \tag{1}$$

where y is the long-term and short-term debt ratios, respectively; x represents the factors that impact on the gearing of the firm as discussed above; β are coefficients to be estimated; u and v capture the industry and time effects, respectively; ϵ is the idiosyncratic error term.

The dynamic model the study considers:

$$y_{i,t} = \gamma_1 y_{i,t-1} + x_{i,t}'\beta + + u_i + v_t + \epsilon_{i,t} \tag{2}$$

where y is the long-term and the short-term debt ratios; x represents the factors that impact on the gearing of the firm, as discussed in Subsections 2.1, 2.2 and 2.3 (control variables); β, γ_1, and α are coefficients to be estimated; u and v capture the industry and time effects, respectively; ϵ is the idiosyncratic error term.

In measuring capital structure determinants, the static and the dynamic models can often generate different results (Kim et al., 2006; Serrasqueiro and Nunes, 2008). Therefore, the joint consideration and comparison between these models allow for a better understanding on influences exerted on a firm's capital structure choices (Haron, 2014; Harris and Raviv, 1990).

While this study employed correlation analysis and VIFs to assess the risk of multicollinearity (see Table 5) in the dataset, the GMM estimator is able to use past realisations of a variable as instruments to further alleviate multicollinearity concerns (Roodman, 2009).

4   Results and discussion

4.1   Influences on capital structure: a FEs model perspective

Table 6 presents the estimation of equation (2), where the dependent variables are short-term and long-term debt ratios. Model 1 represents the entire sample, model 2 the pre-crisis sub-sample, and model 3 the crisis sub-sample. All estimated coefficients are standardised to capture their relative impact on the dependent variables.

Model 1, column 1, depicts a FE estimate of the full sample with the dependent variable being the short-term debt ratio of the firm. According to this model, growth opportunities are negatively related to short-term debt, which contradicts Hypothesis H3a. This is because the estimated coefficient suggests that as growth opportunities decline, the short-term debt of firms increases. This finding contrast evidence that rapidly growing SMEs are likely to resort to external debt due to internal equity constrains (Cressy and Olofsson, 1997; Mac an Bhaird and Lucey, 2010; Stanworth and Curran, 1976). Instead, growing SMEs can sustain a lower leverage (Eriotis et al., 2007; Myers, 1977), which confirms POT. On the other hand, firm liquidity and the asset structure of the firm are both negatively associated with short-term debt, which confirms Hypotheses H5a and H4a. The estimate on profitability is negatively associated with short-term debt, which confirms H2a. Size is positively related to short-term debt at the 1% significance level, which confirms Hypothesis H1a.

Table 6 FEs panel data regression to capture the impact of the crisis on leverage ratios

	Model 1: full		Model 2: pre-crisis		Model 3: crisis	
	ST debt ratio	LT debt ratio	ST debt ratio	LT debt ratio	ST debt ratio	LT debt ratio
Control variables						
Growth potential	−12.780**	−3.604	−11.794	−13.941	−7.107	−0.172
	(6.37)	(13.28)	(8.9)	(13.86)	(9.78)	(6.91)
Liquidity	−1.383***	0.628***	−1.001**	0.845**	−1.177***	0.570**
	(0.34)	(0.21)	(0.39)	(0.34)	(0.25)	(0.27)
Profitability	−14.093***	−8.984*	−11.427***	−8.66	−18.242***	−5.241*
	(2.39)	(4.89)	(2.75)	(5.66)	(3.07)	(3.07)
Size	4.023***	3.241***	3.582***	6.135***	5.470***	3.335**
	(0.93)	(1.1)	(1.26)	(1.54)	(1.8)	(1.33)
Asset structure	−5.345*	24.933***	−10.126**	24.607***	−5.551	26.330***
	(3.14)	(4.81)	(3.99)	(5.17)	(6.67)	(5.44)
Constant	−21.546**	−31.518***	−16.607	−59.056***	−38.091**	−35.031***
	(8.65)	(10.38)	(11.92)	(15.27)	(17.58)	(13.36)
Summary statistics						
F-test	5.23	7.01	3.42	5.39	6.84	8.07
df	515	515	515	515	515	515
RMSE	6.79	7.76	5.88	7.11	5.06	4.99
R-squared	0.09	0.08	0.06	0.07	0.09	0.09
Adj. R-squared	0.09	0.08	0.05	0.07	0.09	0.08
Observations	5,159	5,159	2,580	2,580	2,579	2,579

Notes: *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.
Standardised beta coefficients; cluster robust standard errors in parentheses regressions include time dummy variables. Omitted to save space.

The results of the regression of the explanatory variables on the long-term debt ratio of the firms in the full sample are depicted in column 2. The results of the FEs model confirm all the hypotheses set forth except growth prospects, which shows no statistically significant effect to the long-term debt ratio. These results confirm the POT, suggesting an inverse relationship between profitability and debt, ~~tied to firm profitability~~ (Adedeji, 1998; Cole, 2013) while emphasising that more sizable firms are more likely to resort to long-term financing (Frank and Goyal, 2003; Rajan and Zingales, 1995). At the same time, they confirm the positive relationship between asset structure and long-term debts (Chittenden et al., 1996; Johnsen and McMahon, 2005), as suggested by agency theory supported studies. The results show no relationship between SME growth prospects and external financing, which contrasts expectations that SMEs on a growth track will resort to external sources of finance (Cressy and Olofsson, 1997; Mac an Bhaird and Lucey, 2010; Stanworth and Curran, 1976).

As previously mentioned, the sample was separated into two sub-periods to investigate the impact of the crisis on the capital structure of the sample firms. Model 2 depicts the pre-crisis period, which is defined as years 2004–2008, while model 3 depicts the crisis period, which is defined as years 2009–2013. The results of the FE regression over the two sub-periods are qualitatively similar, which suggests that there was no change to the leverage preferences of the SME owner-managers. The findings contrast current thinking associated with SME capital structure behaviour in the midst of crisis. While SMEs are expected to reduce their preference towards external debt during an economic crisis (Dong and Men, 2014), the findings of the present study reveal no change in the choice of this financing option.

4.2   Influences on capital structure: a dynamic panel estimation

The previous model is a static one, meaning that the values of dependent and explanatory variables are contemporary. However, the current value of debt is expected to be linked to its previous levels. Equation (2) articulates the dynamic model that is utilised to investigate the relationship between the debt ratio and its lagged values. Table 7 depicts the results, where the FE estimation of the full sample of Table 6 is incorporated in the first two columns for comparative purposes. When it comes to assessing the explanatory capacity of lagged values of a dependent variable, several authors, such as Baltagi (2008), Hsiao (2003), Roodman (2009) and Wooldridge (2010) argue that adding a lagged dependent variable on the right side of estimation model introduces heterogeneity that renders the OLS estimator of FE inconsistent. Hence, an array of estimators was proposed using the IV procedure of Anderson and Hsiao (1981), which calls for articulating the correlated variables with exogenous instruments. However, in practice, such instruments are difficult to find, and therefore, a series of GMM estimators were developed that use as instruments the lagged values of the dependent variable. Such GMM estimators are uncorrelated not only with the dependent variable and its lag values, which act as an explanatory variable, but also with the difference error term that is created (Blundell and Bond, 1998).

To this end, this study employs a two-step GMM estimator regression whose results are shown in the last two columns of Table 7. The results provide evidence that the lagged values of both the short-term and the long-term debt ratios are positively related with current levels of debt. The results indicate that firms change their capital structure over time, which is consistent with the POT and agency theory (Copeland et al., 2005;

De Jong et al., 2011). The results between the static and the dynamic model are qualitatively similar. Exceptions are the relationships between growth prospects and short-term debt (negative) and between size and long-term debt (positive), which are not statistically significant under a dynamic model. Under a dynamic model, the findings suggest that profitability (H2a, H2b) has a long-term negative effect on both short-term and long-term debt, which is consistent with the study's hypotheses and POT. Firm liquidity has an enduring negative effect on short-term debt and a long-term positive influence on long-term debt, which again confirms the proposed hypotheses (H5a, H5b) and POT. Firm size relates positively only on short-term debt (supporting H1a), which partly supports POT, indicating that larger SMEs have consistent preference towards short-term debt capital. Larger SMEs do not consistently prefer long-term debt; this preference contrasts past evidence which proves the opposite (Booth et al., 2001; Frank and Goyal, 2003; Rajan and Zingales, 1995). SME asset structure is negatively associated with short-term debt and positively linked to long-term debt, which confirms the study's hypotheses (H4a, H4b) as well as the agency theory. This denotes that SMEs with higher collateral will show preference to long-term debt as opposed to the more expensive short-term debt financing. Growth potential is ~~not~~ linked to neither short-term debt nor long-term debt, which rejects the study's hypothesised positive relationship between these variables (H3a, H3b). These findings are not consistent with previous studies, which claim that fast growing SMEs are likely to resort to external debt due to internal equity constrains (Cressy and Olofsson, 1997; Daskalakis and Psillaki, 2008; Sogorb-Mira, 2005).

4.3   The effect of business cycle on the capital structure of SMEs

To examine the effects of the business cycle on the debt finance preferences of UK SMEs this study tests three different models, which extend one another by incorporating more of the set of independent variables to the regression exercise. This is done to isolate the effects of growth, first in GDP and then to capture its effects in the presence of the control variables. All models test a version of equation (2), which utilises a dynamic model that incorporates the lagged values of the dependent variables on the right-hand side. Model 1 includes economic growth proxied by the growth rate of GDP as an explanatory variable of the contemporary realisations of both the short and long-term debt ratios of SMEs; model 2, extends model 1 by adding the square of economic growth to the right-hand side variables, while model 3 considers the remaining independent variables employed in this study. Table 8 depicts the results.

All three models show that the economic environment, as captured by the linear proxy, is not statistically significant to ~~neither~~ the short-term ~~nor~~ the long-term debt of SMEs. A linear relationship between the economic environment and debt does not hold. Further, the models provide statistical evidence that the short-term and long-term debt ratios are influenced by their lagged value as well. Models 2 and 3 (economic growth squared), though, illustrate the presence of nonlinearities in the relationship between economic growth and long-term debt. Model 3 demonstrates a nonlinear relationship between economic growth and short-term debt as well. These findings depict the long-term and short-term ratios as being influenced by the percentage change of GDP in a convex manner. Figure 1 offers more details on this nonlinear relationship. As the economy enters a deep recession, and GDP growth rates drop, SMEs start shedding debt

up to a minimum point. This is the point zero, where a 0% long-term and short-term debt ratio and a 0% GDP growth rate meet. Beyond that point, and still during a recessional period, the companies feel comfortable to start piling debt again. Hence, the short-term and long-term debt ratios increase.

Table 7   Panel data estimations with lagged explanatory: dynamic estimation

	Fixed effects		Two step GMM	
	ST debt ratio	LT debt ratio	ST debt ratio	LT debt ratio
Independent variables				
Growth potential	−12.780**	−3.604	0.148	1.465
	(6.37)	(13.28)	(5.24)	(6.96)
Liquidity	−1.383***	0.628***	−0.734***	0.303**
	(0.34)	(0.21)	(0.21)	(0.12)
Profitability	−14.093***	−8.984*	−12.257***	−3.438*
	(2.39)	(4.89)	(2.43)	(1.79)
Size	4.023***	3.241***	2.133***	0.331
	(0.93)	(1.1)	(0.63)	(0.52)
Asset structure	−5.345*	24.933***	−5.079**	9.941***
	(3.14)	(4.81)	(2.15)	(2.14)
Lag1. (short-term debt)				0.519***
				(0.07)
Lag1. (long-term debt)				0.801***
				(0.05)
Constant	−21.546**	−31.518***	−11.664*	−8.672*
	(8.65)	(10.38)	(6.45)	(5.22)
Summary statistics				
F-test	5.23	7.01	12.32	54.41
df	515	515	515	515
RMSE	6.79	7.76		
R-squared	0.09	0.08		
Adj. R-squared	0.09	0.08		
Instruments	281	278		
Arellano-Bond test for AR(1)	0.00	0.00		
Arellano-Bond test for AR(2)	0.73	0.5		
Hansen	0.18	0.05		
Observations	5,159	5,159	4,643	4,643

Notes: *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.
    Cluster robust standard errors in parenthesis.
    The Hansen test suggests that the instruments as a group are valid.
    Regressions include time and industry dummy variables. Omitted to save space.

Table 8 Two step GMM estimations for the impact of economic growth on leverage

|	Model 1		Model 2		Model 3	
	ST debt ratio	*LT debt ratio*	*ST debt ratio*	*LT debt ratio*	*ST debt ratio*	*LT debt ratio*
Independent variables						
Economic growth	0.042	–0.013	0.039	–0.016	0.015	0.025
	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)
Economic growth^2 (squared)			0.001	0.048**	0.033**	0.048**
			(0.03)	(0.02)	(0.01)	(0.02)
Lag ST debt ratio	0.908***		0.852**		0.513***	
	(0.13)		(0.36)		(0.07)	
Lag LT debt ratio		1.060***		0.761***		0.801***
		(0.13)		(0.19)		(0.05)
Growth potential					0.153	2.264
					(5.2)	(7.06)
Current ratio					–0.732***	0.305**
					(0.21)	(0.13)
Profitability					–11.978***	–3.573*
					(2.32)	(1.93)
Size					2.145***	0.274
					(0.61)	(0.54)
Asset structure					–5.204**	9.972***
					(2.07)	(2.13)
Constant	0.563	–1.44	0.895	0.923	–12.421**	–8.431
	(1.34)	(1.28)	(3.33)	(1.94)	(6.11)	(5.29)
Summary statistics						
F-test	21.05	23.79	7.46	8.58	17.66	86.22
df	515	515	515	515	515	515
Instruments	16	13	16	13	281	278
Arellano-Bond test for AR(1)	0.00	0.00	0.01	0.00	0.00	0.00
Arellano-Bond test for AR(2)	0.60	0.56	0.63	0.51	0.75	0.51
Hansen	0.17	0.1	0.08	0.1	0.28	0.05
Observations	4,644	4,644	4,644	4,644	4,643	4,643

Notes: *$p < 0.10$, **$p < 0.05$ and ***$p < 0.01$.
Cluster robust standard errors in parenthesis.
The Hansen test suggests that the instruments as a group are valid.
Regressions include time and industry dummy variables. Omitted to save space.

Figure 1   Convex relationship between economic growth and debt ratios of the sample firms
         (see online version for colours)
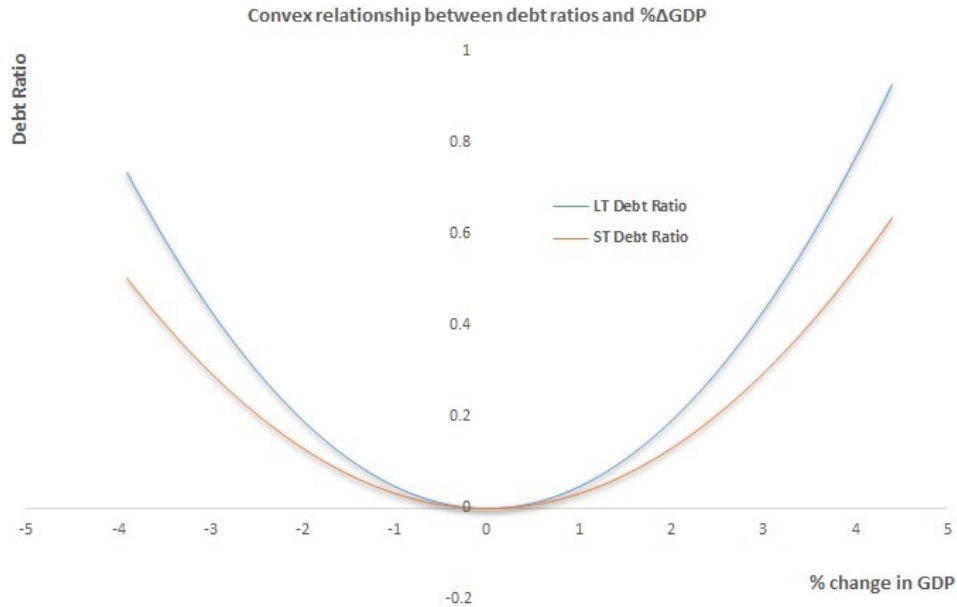
Consequently, the findings suggest a tipping point and thus a nonlinear pattern, in the consideration of short-term and long-term debt by SME owners. Short-term and long-term debt reconsideration is tied with the prospects of the economy during the crisis. The more favourable the prospects (that is, when the economy shows signs of recovery) the more SMEs will be inclined to start considering this financing mode again. During a recessional period, SMEs will still show preference to debt borrowing if they are accustomed to the financing mode, but more conservatively. This nuance of SME capital structure behaviour is not sufficiently reflected in existing literature. These findings contrast literature which suggests that SMEs will reduce substantially their borrowing during a period of financial crisis (Bank of England, 2011; Dong and Men, 2014).

4.4   Contributions

The findings of the present study contribute to the field of SME capital structure in a number of ways. First, the present study offers new insights on SME capital structure through a joint consideration of internal (firm-specific) and external environmental influences. The latter is a dimension that has not been sufficiently researched in relation to SME capital structure choices (Martinez et al., 2019). Studies on SME capital structures examine primarily firm-specific determinants (Banga and Gupta, 2017; Nunes and Serrasqueiro, 2017). Incorporating influences stemming from the external environment, alongside firm-specific determinants, the present study offers an integrated understanding of SME capital structure behaviour. This meets a call for simultaneously considering firm-specific and external environmental influences to comprehend more holistically the capital structure behaviour (Duan et al., 2012) of SMEs.

Second, the present study contributes theoretically by drawing on a novel blend of micro-level (i.e., POT and agency theory) and macro-level theories (i.e., monetary

business cycle) to explain SME capital structure choices. A recent bibliometric review by Martinez et al. (2019) reveals the absence of micro and macro-level theoretical blending in the field of SME capital structures. Studies so far draw on theoretical approaches commonly used in the field of corporate finance, such as the POT, trade-off, and agency theory, which focus on the micro-level, and specifically on firm-specific determinants of SME capital structure choices (see for example, Banga and Gupta, 2017; Pacheco, 2016; Uyar and Guzelyurt, 2015).

Third, the present study offers new insights on the nexus between business cycle fluctuations and SME capital structure choices. The business cycle has not been sufficiently used to explain SME capital structures (Martinez et al., 2019). Studies on business cycle influences over capital structure choices have focused on larger, mainly publicly listed firms (for example, Bandyopadhyay and Barua, 2016; Erel et al., 2012). Yet, the use of the business cycle can help provide alternative explanations (Martinez et al., 2019) to the firm-specific determinants of SME capital structures (Banga and Gupta, 2017; Nunes and Serrasqueiro, 2017). Drawing on business cycle effects, the findings show a nonlinear relationship between economic growth and short-term and long-term debt. This paper demonstrates that SME owners will reduce their short-term and long-term debt ratios during a recessional period up to a tipping point. After the tipping point, SME owners revert back to considering debt. These are SME capital structure behaviours which have not been projected so far in the literature.

Fourth, drawing on privately held UK SMEs, the findings offer new knowledge on the capital structure behaviours of SMEs. The findings shed light on SME capital structure behaviour which is not fully aligned with existing evidence on SME capital structure decisions (see for example, Chittenden et al., 1996; Trinh et al., 2017; McNamara et al., 2017). While the findings suggest that capital structure decisions evolve, they illustrate enduring SME attitudes towards debt, which are not all consistent with the POT and Agency theories (as initially hypothesised). Larger SMEs, for example, do not always prefer long-term debt as a financing option. Additionally, SME growth is not positively linked with gearing ratios, as illustrated in previous work. These results may be attributed to the context in which the sampled SMEs are embedded. This meets the call to consider country-specific conditions and idiosyncrasies when researching SME capital structures (Mac an Bhaird and Lucey, 2014).

5   Conclusions

The results of the static and dynamic models are qualitatively similar suggesting that most of the factors identified by the capital structure literature as impacting the short-term and long-term debt ratios of firms are relevant to UK SMEs operating in the primary sector. An exception to the POT and Agency theories is that size relates to long-term debt borrowing only in the short-term. Further, the study's findings contrast evidence that rapidly growing SMEs are likely to resort to external debt due to internal equity constrains. Instead, growing SMEs can sustain a lower leverage, which confirms POT. In addition, the results contradict the notion that SMEs, considering the restriction in the availability of capital that resulted with the onset of the financial crisis, have changed their financing preferences. In mitigating the risk associated with the persistent use of debt financing, owners and managers of SMEs may need to think more laterally in

terms of their financing options and become flexible to amend their firm's capital structure depending on the circumstances faced. This will allow smaller firms to make choices that are the most cost effective and risk-free for the firm, at any given time, thus increasing the prospects for small firm sustainability. Policy makers must be aware of this finding when introducing policies geared towards SMEs. A supply side policy could be useful if built on the premises of making SME owners and managers aware (through examples and cases) of the consequences of persisting on particular forms of finance. In the context of such policy, training programs can be designed to enhance the capabilities of owner-managers to flexibly consider a varied of financing modes, depending on firm-needs and the prevailing external conditions. It is essential that policy makers should strive to push alternative forms of finance into the consciousness of owner-managers to help reduce the dependence of SMEs to financial institutions.

Furthermore, this paper reveals a nonlinear relationship between economic growth and the leverage of firms. Findings provide evidence that both the short-term and long-term debt ratios of SMEs are influenced by an economic recession in a convex manner. The implication of this finding is that firms are anxious to reduce their (short-term and long-term) debt exposure when the economy starts to show its first negative signs. However, as the economic climate strengthens, yet still within a recessional period, SMEs gain more confidence about the future and they start increasing their (short-term and long-term) debt levels again. It also implies that general debt reduction during crisis may be lender-driven. Owners and managers of SMEs should become more proactive in their financing strategies, considering very meticulously the key risks associated with their capital structure decisions. A financial crisis, which threatens SME capital structure decisions, can be anticipated through the presence of 'emergency deposits' which can be used only in crisis-related situations when external debt may be inaccessible or very costly. SMEs can also deal with such risk by proactively seeking alternative forms of external finance, which are not heavily linked with economic conditions. Policy makers can also ensure that the proper infrastructure and systems are in place to avoid disruptions in small firm-bank relations in periods of adverse economic conditions. Thus, emphasis may not necessarily be placed on SMEs per se, but also on lenders such as banks in ensuring that agency-related problems tied to increased debt cost or obstacles in debt provision towards SMEs are minimised.

A limitation of this paper, which is inherent with all research on privately held smaller firms, is the accuracy and veracity of the reported data. Although Bureau van Dijk upholds high standards in terms of data verification there are some discrepancies in the dataset that can ultimately confine the estimation process and, therefore, the generated results. For example, some companies have more than 1,000% long-term debt to equity ratio, when the mean ratio is approximately 15%. While these extreme observations were removed from the sample by trimming the distribution by 5% on both sides, nevertheless, some cause for concern persists regarding the accuracy of the data.

Future research should move beyond the mere consideration of firm-specific determinants to understand SME capital structure choices. Future studies should focus more directly on understanding business cycle influences, which are yet to be sufficiently considered in conjunction to SME capital structures. Another avenue of future work is to combine theories which can provide integrated explanations of capital structure choices, at the nexus of micro and macro-level influences. Additionally, the joint consideration of and comparison between static and dynamic analytical models can be a way forward for understanding better the influences exerted on a firm's capital structure choices. Last, the

results of this study point out that any examination of the determinants of capital structure needs more sophisticated econometrics that will examine relationships over a longer period, and over several economic cycles.

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Notes

1   For a more detailed exposition on the link between financing and growth see Levine (2005) and Hyytinen and Toivanen (2005).

2   Data enable the inclusion of balance sheet values for 2013 as well, but no qualitative difference was observed when including it.

3   Even though July 2008 is the official start day of the financial crisis this study uses 2009 as the starting point of the crisis in the UK on the assumption that the effects of the crisis are first fully captured in the financial statements of 2009 and onwards.