Are European SMEs financially constrained? : A systematic literature review

This version : 01/30/2023

Abstract

The 2008 financial crisis has raised fears that economic growth might be impaired by financing constraints, especially as regards small and medium enterprises (SMEs). In Europe, this led to numerous public initiatives targeting SMEs, without the certainty of them being efficient. This paper aims at identifying the main factors facilitating access to finance for European SMEs. We conduct a systematic review of the literature dated post 2008 in order to answer two principal questions : are SMEs financially constrained?

JEL classification : G1, G2, G3

Preliminary draft - please do not quote

Access to finance for European SMEs: A systematic literature review

1. Introduction

The conditions of growth of small and medium enterprises (SMEs) have gathered considerable attention from governments since the 1990s. The 2008 financial crisis, in particular, aroused fears that financing restrictions might have negative consequences on GDP growth and employment, and induced public authorities to foster special investment and attention on SME financing. In Europe, the Small Business Act (2008) stated the need to rely on the agility and growth potential of SMEs, and to offer them a friendlier economic environment.

Beck (2013) notes, however, that the causality between SMEs and economic growth is discussed in the academic literature. There is also little consensus about the role of financing in SMEs' performance and growth.

Literature on SME financing is plethoric, rendering difficult an overview of the principal results. In particular, it is not clear whether and which SMEs are financially constrained.

The literature reviews that have been published on SMEs financing either focus on a specific sub-topic - for example, Abdulsaleh & Worthington (2013) document the financing sources of SMEs, Boadi & Mertens (2018) focus on the relation between SME financing and bank profitability - or on developing countries (Beck, 2013; Kersten et al., 2017). Developed economies have been comparatively less scrutinized by the academic literature because financial constraints are supposedly alleviated by economic development (Beck & Demirguc-Kunt, 2006). However, a significant proportion of SMEs from developed countries report being financially constrained.

The aim of this paper is to provide a mapping of the literature on SMEs financing in developed economies in order to investigate whether and which small firms are financially constrained. Due to the fact that this literature is mostly empirical and due to the disparity of SME definition between Europe and other countries such as the US or Australia, we chose to

focus on European developed countries. In the next section, we present the methodology of our paper selection and sorting for the systematic review. Section 3 summarizes the literature. Section 4 presents and discusses the main findings and concludes.

2. Data and methodology

This paper is structured by following the method outlined in the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) Statement (Page et al. 2021). To ensure the systematic nature of the literature review, inclusion and exclusion criteria are formally identified (Table 1). Following Vom Brocke et al (2015), we conduct a systematic review in Fink's (2010, p. 3) definition, i.e. "a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners", in the aim to realize a state-of-the-art of the literature on SME financing.

2.1. Papers collection

2.1.1. Databases

The initial sample is obtained by a search among articles written in English and published in academic peer-reviewed journals included in two EBSCO literature databases: Econlit with full text[1] and Business Source Premier[2]. A complementary research was conducted in ScienceDirect, Wiley and Web of Science databases. The research period goes from 1st of January 2008 to 31st of December 2022. Starting the research in 2008 allows including the entire scope of research following the financial crisis.

Tranfield et al. (2003) advocate to collect also the gray literature. However, considering the size of our sample, we decided to collect only published articles in peer-reviewed academic journals, thus following Touboulic & Walker (2015), who consider that this choice allows to guarantee, to a certain extent, the quality of the research. We consider the reviewing process as an equivalent of an expert panel. Subsequently, journals that were not classified as a quality journal by the academic community were excluded from the sample (see 2.2.).

[1] The complete list of academic journals referenced with Econlit is given by the American Economic Association: https://www.aeaweb.org/econlit/journal_list.php.

[2] The complete list of journals referenced with Business Source Premier is here: https://www.ebscohost.com/titleLists/buh-journals.pdf

2.1.2. Keywords

Since the search engines differ among databases, the research criteria had to be adapted for each source. The research is conducted among references written in English, full text and published in an academic journal (reviewed by a reading committee) during the period 2008-2022.

We first searched in the EBSCO database[3] for the following keywords in any combination or Author-Supplied Keywords (KW), Subject (SU), and Title (TI) :

(TI (SME OR start up OR start-up OR startup OR small-cap OR smallcap OR (small OR medium OR medium-sized) AND (firm OR business OR cap OR corporation OR company OR companies OR organisation OR organization OR business OR enterprise))
OR KW(SME OR start up OR start-up OR startup OR small-cap OR smallcap OR (small OR medium OR medium-sized) AND (firm OR business OR cap OR corporation OR company OR companies OR organisation OR organization OR business OR enterprise))
OR SU (SME OR start up OR start-up OR startup OR small-cap OR smallcap OR (small OR medium OR medium-sized) AND (firm OR business OR cap OR corporation OR company OR companies OR organisation OR organization OR business OR enterprise))
AND (SU (finance OR financing) OR KW (finance OR financing) OR TI (finance OR financing))

Science direct :

Title, abstract, or keywords = (SME OR start up OR start-up OR startup OR small-cap OR smallcap) AND (finance OR financing)

Parameters

- Research Article (1367)
- Business, Management and Accounting (646)
- Economics, Econometrics and Finance (356)

Scopus

Article title, abstract, or keywords = ((SME OR start up OR start-up OR startup OR small-cap OR smallcap OR ((small OR medium OR medium-sized) AND (firm OR business

[3] bases : Business Source Premier and **Econlit with full text**

OR cap OR corporation OR company OR companies OR organisation OR organization OR business OR enterprise))) AND (finance OR financing))

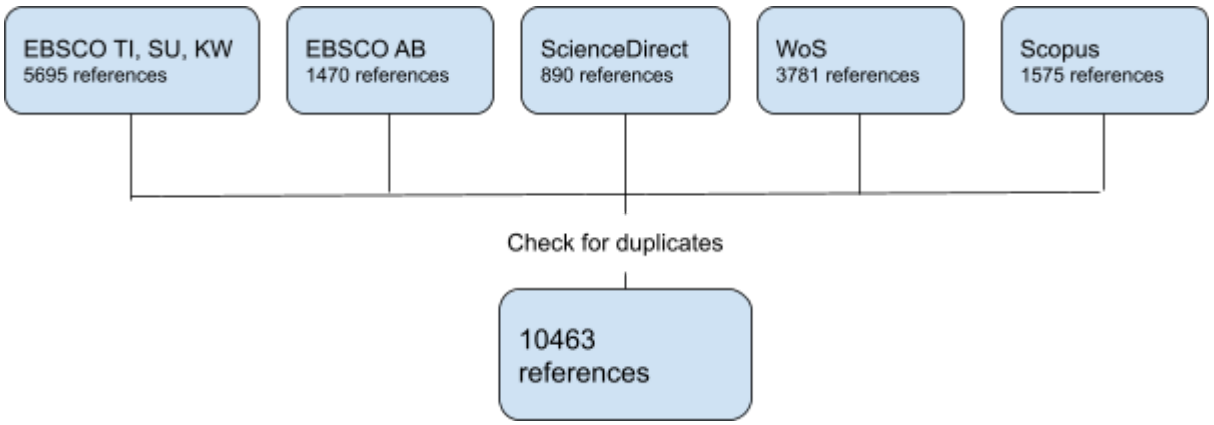
- Article
- English

Web of Science

TOPIC=((SME OR start up OR start-up OR startup OR small-cap OR smallcap OR ((small OR medium OR medium-sized) AND (firm OR business OR cap OR corporation OR company OR companies OR organisation OR organization OR business OR enterprise))) AND (finance OR financing))

- Document type : Articles
- Language : English
- 6.10 Economics (2,453)
- 6.3 Management (1,328)

Figure 1.



2.2. Papers selection

2.2.1. Review quality

Only articles that were published in a review that appeared in journal quality lists were retained in the sample, leading to the removal of 2695 references. The 2022 journal quality

list of Anne-Wil Harzing[4], the 2021 Academic Journal Guide 2018[5], and Scimago 2021[6]. Only articles that did appear in at least one of these lists were included in the sample.

2.2.2. Geographical region

Beck et al. (2008) note that economic development influences financial opportunities. Moreover, SME definitions vary widely from one country to another : the International Finance Corporation (IFC) provides a size threshold of 300 employees for a medium-sized company, while this threshold is 250 employees in Europe, 300 in Japan, and 500 in the USA and Canada. By contrast, the size threshold in terms of total assets is much more restrictive in the IFC definition (less than $15 million) than in the European definition (less than €43 millions). Consequently, this research is restricted to European Union countries defined as advanced economies by the World Economic Outlook 2008[7].

2.2.3. Editorials and conceptual papers

We excluded papers that were not written in English (21 references), editorials (25 references), or strictly conceptual papers (5 references).

2.2.4. Off topic papers

Papers that were considered off topic (422 references) or too specific (11 references) were excluded from the sample. Off topic papers focused on history, microfinance, financial performance, tax policy, mergers and acquisitions, family firms unrelated to SME financing, or scoring methodologies. In order to limit the subjectivity of this selection, papers were separately sorted by two researchers based on title, keywords, abstract and, if necessary, full text reading.

[4] https://harzing.com/resources/journal-quality-list
[5] https://charteredabs.org/academic-journal-guide-2018-available-now/
[6] https://www.scimagojr.com/journalrank.php
[7] Among EU countries, advanced economies as defined by the World Economic Outlook 2008 are: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Spain, Sweden, United Kingdom.

Table 1. Inclusion and exclusion criteria

I/E	Criteria	Criteria explanation	Number of papers
Inclusion		Articles published in English in a peer-reviewed academic journal between 2008 and 2022	10463
Exclusion	Journal quality list (NC)	Articles not published in a review figuring in at least one of the three selected lists	2685
	Geographically excluded (GE)	GE-1 : Empirical studies from Africa	GE-1 : 818
		GE-2 : Empirical studies from America	GE-2 : 1027
		GE-3 : Empirical studies from Asia (including India)	GE-3 : 2153
		GE-4 : Empirical studies from MENA (Including Turkey)	GE-4 : 400
		GE-5 : Empirical studies from Oceania	GE-5 : 85
		GE-6 : Empirical studies from European countries outside the European Union (except UK)(Albania, Andorra, Belarus, Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro, Moldova, Russia, San Marino, Serbia, Ukraine)	GE-6 : 182
		GE-7 : Empirical studies from European countries not considered as Advanced Economies by the World Economic Outlook 2008 (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia)	GE-7 : 261
	Not written in english (NW)	A paper written in a language other than English	22
	Non-research (NR)	The paper is not an academic article. For example, editorial material (NR-1)	61
	Off topic (OT)	A paper focused on history, microfinance, financial performance, tax policy, mergers and acquisitions, family	394

		firms unrelated to SME financing, or scoring methodologies, consequences of access to finance, financing sources	
	Too specific (TS)	A paper considers a case study, specific sector, specific subject.	17

2.3. Themes coding

The articles in the sample were then coded by keywords after reading the title and abstract (Table 2). Keywords were subsequently sorted by sub-topic (CODE 1), by topic (CODE 2), and then by theme (CODE 3).

Table 2: papers coding

CODE 1	NB	CODE 2	NB	CODE 3	NB
Small firms specificities	2	Early stage finance	17	Financing sources	89
Bootstrap financing	4				
Equity investment	4				
FFF (Founder, Family and Friends)	4				
Business angels	4				
VC and SME uncertainty	11	Venture capital	39		
The VC industry	10				
Active investors	12				
Staged financing & exit choices	6				
SMEs: a profitable segment for banks	2	Bank financing	39		
Relationship lending	21				
Credit card financing + credit line	2	Short term finance	26		
Trade credit	19				
SCF (Supply Chain Finance)	4				
Stock markets	12	Dis-intermediated finance	31		
Mini bonds	3				
Securitization	2				
Crowdfunding	14				
ICFS (Investment-cash flow sensitivity)	7	Constraint measures	23	Financial constraints: generalities	63
Funding gap and discouraged borrowers	9				
Cost of capital	6				
Alternative models	2				
Crisis and credit rationing	15	Economic cyles	29		

Consequences of the crisis on SME's capital structure, investments and solvency	15				
Public support as a solution for credit market failures	24	Public support	37		
Limits and drawbacks of public support	14				
Regulation	9	Environment's characteristics	26	Access to finance	145
Bank competition	17				
Distance	17				
Age & size	16	Firm's characteristics	69		
Legal form	12				
Industry	6				
Firm's risk	22				
Collateral	7				
Guarantee	4				
Others	5				
Gender	11	Entrepreneur's characteristics	40		
Ethnicity	4				
Age, experience, education	16				
Attitude and investment readiness	12				
Innovation and R&D	18	Project's characteristics	20		
FDI (Foreign Direct Investment)	2				
Pecking-order theory (POT) versus Trade-Off Theory (TOT)	26	Capital structure	68	Consequences of access to finance on capital structure choices and firm's development	92
Leverage	6				
External factors	13				
Age, size and activity	7				
Governance	12				
Cash holdings	2				

Family firms	6				
Optimism & overconfidence	3				
Survival	9	Consequences	24		
Performance	8				
Growth	9				
Internationalization	5				
Innovation	16				
Investments	4				

Among the existing literature and in order to answer the problem of the financing constraint of SMEs, we will focus on the following themes (CODE 3): “Access to finance” and “Financial constraints: generalities”.

3. A state-of-the-art on European SME access to finance

3.1. Access to finance and the environment's characteristics

Andrieu et al. (2018) and Holton et al. (2013) report **cross-countries divergences within Europe** in SMEs access to finance.

3.1.1. Regulation

Financial and institutional development (Beck et al., 2008; Ardic et al., 2012), reporting regulation (Breuer et al., 2018), bankruptcy rules (Blazy et al. 2013, Garcia-Posada & Mora-Sanguinetti, 2014) and creditor protection (Hyytinen & Takalo, 2008; Hernández-Cánovas & Koëter-Kant, 2011; Galindo & Micco, 2016) alleviate SMEs' financing gap.

Hernández-Cánovas & Koëter-Kant (2010) find that SMEs in countries with low legal efficiency are more likely to establish multiple bank relationships. These results suggest that **banks in countries where protection of creditor rights is poor may resort to multiple banking to share this additional risk.**

The **national creditworhiness** is essential to foster cross-border portfolio investment (Knill & Lee, 2014), which contributes to the development of start-up finance (Korosteleva & Mickiewicz, 2011). Holton et al. (2014) also find a significant impact of private indebtedness on credit T&C.

Following the financial crisis, **the Basel II agreements have contributed to tighten credit** (Scellato & Ughetto, 2010) and T&C (Schindele & Szczesny, 2016). Bams et al. (2019) advocate that capital requirements associated with SMEs might be too high compared to corporate capital requirements.

3.1.2. Economic cycles

3.1.2.1. The 2008 financial crisis has created financial restrictions for SMEs...

Credit crunches should affect primarily banks specialized in the financing of SMEs (Bruno, 2009). Rodano et al. (2018) predict that the weaker SMEs will be excluded from credit in burst periods. Consistently with these theoretical predictions, at the peak of the recession following the 2008 financial crisis, smaller firms were denied credit (Cowling et al., 2012; Paulet et al., 2014) and credit terms and conditions (T&C) tightened over time for European SMEs (Drakos, 2013). Armstrong et al. (2013) show that this credit tightening subsided at least till 2012. Bremus & Neugebauer (2018) find that at least part of the decline in SME lending could be attributed to the withdrawal of banks from their cross-border business.

3.1.2.2. … With sizable differences among European countries

Drakos (2013) report, however, sizable differences among European countries, with significantly stronger T&C tightening in Greece, Ireland, Portugal or Spain. Ferrando et al. (2017b) also show that credit conditions were tighter in stressed countries, and Holton et al. (2013) report that cross-countries differences in bank credit restrictions were related with the weakness of the economy and with private debt ratios. While empirical studies on UK SMEs report credit restrictions following the crisis (Cowling et al, 2012; Lee et al., 2015; North et al., 2013; Armstrong et al. 2013), research in other countries report also a decline in credit demand (Hernando & Villanueva, 2014, in Spain; Kremp & Sevestre, 2013, in France).

3.1.2.3. … Consequences of the financial crisis

SMEs reacted to their financing restriction by increasing their dependency towards internal capital (Van Hoang et al., 2018, on French micro-enterprises), **trade credit** (Carbo-Valverde, 2016, McGuiness et al., 2018), **credit lines** (Campello et al. 2012) and by **investment withdrawals** (Vermoesen et al., 2013).

Amon & Dorfleitner (2013) observe a **stronger demand for mezzanine capital** during the financial crisis and a significantly lower average percentage of senior debt in the capital structure during the crisis than before the crisis.

The 2008 financial crisis had a significant impact on SMEs' performance (Lawless et al., 2015a), **capital structure** (Balios et al., 2016; Ferrando et al., 2017a; Van Hoang et al., 2018) and on their **solvency** (McCabe, 2009, Deloof & Vanacker, 2018), **especially for younger**

and smaller firms (Cowling et al., 2012). Vegetti & Adascalitei (2017) report that the last financial crisis has decreased entrepreneurial activity, especially in countries where SMEs are financially constrained. However, these insolvencies could be due to the direct consequences of the financial downturn rather than to financing difficulties (Ma & Lin, 2010), and the economic downturn might have weakened credit demand from SMEs (Hernando & Villanueva 2014 ; Holton et al., 2014).

3.1.3. Public support

Governments responded to the tightening of access to entrepreneurial finance by different measures, including loans guarantees, export facilitation and credit mediation (Potter & Thomson, 2011). In Europe, the Horizon 2020 programme supports SMEs research and innovation activities (Jancikova & Stratovska, 2015) through grants, debt guarantee and equity facilities. The European commission also supports SMEs through communication, networks, and finance, through the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) financial instruments.

Talbot et al. (2015) suggest that credit unions in the UK could substitute for bank finance, but show that they are reluctant to do so due the high perceived risk and their lack of expertise of the SME sector.

3.1.3.1. Public support as a solution for credit market failures

Public support may be an efficient solution to market failures (Raith et al., 2010, Van der Schans 2015; Briozzo & Cardone-Riportella, 2016), since credit allocation procedures do not integrate positive externalities. Grants, government loans or public guarantees may also convey information that is relevant to banks' loan assessment procedures, especially in situations where information asymmetry is high. Young and innovative SMEs are heavily reliant on government interventions (Owen et al., 2019).

Governments all over the world use loan guarantee schemes to facilitate SMEs' access to debt capital. Credit guarantees can enable the funding of socially efficient projects that would not be financed otherwise (Janda, 2011).The Small Firms Loan Guarantee Scheme (SFLG) initiated in the UK in 1981 has alleviated financing constraints (Cowling, 2010), and SMEs that benefit from the SFLG achieve superior performance in the form of improved sales, job creation and exports (Cowling & Siepel, 2013). Garcia-Tabuenca & Crespo-Espert (2010) report that **the** Spanish guarantee system facilitates the capacity to tackle projects of the weakest companies, even though it did not reduce their cost of capital. Hennecke et al.

(2019) also report considerable economic benefits of German guarantee banks in terms of increased production and employment, while the economic costs are negligible. Public guarantees can alleviate the lack of strength of private markets such as the Venture Capital market (Mason, 2009), and be complementary to alternative measures such as tax incentives (Giraudo et al., 2019). Public credit guarantees and public loans have been found to alleviate SMEs' credit constraints in Italy (Zecchini & Ventura, 2009), England (Irwin et al., 2014), Belgium (Meuleman & Maeseneire, 2012), Germany (Hottenrot et al., 2018), Spain (Marti & Quas, 2018). This effect is stronger for smaller firms and in highly information-opaque sectors. However, Boschi et al. (2014) report a nonlinear effect of guarantees suggesting that coverage ratios below a certain threshold are likely to be ineffective.

Bach (2014) shows that in France, bank **loans made from subsidized funds** efficiently targeted financially constrained firms, and did not cause a surge in default risk. Baldock & Mason (2015) examine two UK public schemes addressing the seed and early stage equity finance gap since the global financial crisis, the Enterprise Capital Funds (ECFs) and the Angel Co-Investment Fund (ACF), and find them to be complementary and effective.

Seo (2017) observes the role of financial support, i.e. government loans, government-guaranteed loans, relationship banking, financial stability steps, and equity-linked financing, in promoting economic growth. They report that the type of financial support that contributes most to economic and employment growth is the set of steps that governments take to ease **pro-cyclicality.** Behr et al. (2013) show that borrowing from state-owned banks can significantly alleviate financial constraints. Behr et al. (2017) investigate the cyclicality of SME lending of local banks with versus without a public mandate, and find that banks with a public mandate are 25% less cyclical than other local banks.

3.1.3.2. Limits and drawbacks of public support

Public support seems rather confidential (Irwin et al., 2014; Romero-Martinez et al., 2010), **and mainly benefits larger companies** (Beck et al., 2008; Kiese & Kahl, 2017; Ughetto et al., 2017; Mayordomo & Rodríguez-Moreno, 2018). The use and usefulness of supporting programmes depend on the characteristics of the company (Han & Benson, 2010, Ughetto et al., 2017), and of the financing need (Ughetto et al., 2017). In particular, funding schemes that are used to finance working capital seem to increase SMEs financial risk (De Blasio, 2018).

Some papers raise the possibility that **public support might be a waste of resources or might not be efficiently allocated**. Svensson (2008) reports that in Sweden, innovation projects with soft government financing in the Research and Development (R&D) phase have a significantly inferior performance compared to projects without such financing, whereas those receiving government loans on commercial terms perform as the average. He shows that this failure primarily depends on bad financing terms, rather than bad project selection.
Raith et al. (2010) show that neither US SBA nor the German KfW federal lending institutions features an optimal lending structure. Macartney (2014) reports that the Merlin agreements, which were the UK response to the economic crisis, were ineffective, due to a lack of capacity and incentive from UK-based banks to lend more. Jones-Evans (2015) shows that one of the few publicly owned regional development funds in the UK failed to reduce the cost of borrowing to SMEs and to utilize the full range of financial instruments to ensure to maximize its impact.
Storey & Frankish (2016) consider the high default rate of SMEs as a significant factor of risk for governments seeking to facilitate access to finance for this sector. Zabojnik (2009) also suggests that when firms compete for investment funds, an increase in financial friction can lead individual firms to increase their investment levels. Consequently, government programs that make capital cheaper for small firms may lead to lower levels of investment and decreased efficiency.

3.1.4. Geographical distance

3.1.4.1. There is no consensus about whether SMEs from backward areas are more constrained

SMEs from backward regions, such as Southern Italy or the West Midlands in the UK, seem to be more constrained than other SMEs (Alessandrini et al., 2010; Sarno, 2008; Donati & Sarno, 2015; Lee & Brown, 2017). The access to bank finance seems, in particular, to be correlated with the vicinity of banks (Alessandrini et al., 2010; Bellucci et al., 2013; Deloof et al., 2019; Zhao & Jones-Evans, 2017). **This difficulty in accessing finance from deprived areas is however discussed in the literature.** Lee & Drever (2014) find that UK firms in deprived areas are more likely to perceive access to finance as a problem but there is no evidence that, after controlling for other firm characteristics, they actually do find it harder to obtain. (see also Tianshu & Jones-Evans, 2017). Bellucci et al. (2019) aslo report a strong negative relation between bank-borrower distance and collateral.

Appleyard (2013) explores the financial inclusion of enterprise through community development finance institutions (CDFIs) which provide loan finance to firms at the commercial margins in the West Midlands, and concludes that CDFIs could partially address the financial exclusion of enterprise as an additional, alternative source of finance to that of mainstream banks.

3.1.4.2. The functional distance within the bank

The geographical distance between the SME and the lending bank must be relativized by the possible functional distance within the bank for the financing decision. Bank mergers move the decision power inside the bank, resulting in higher decision-making powers in granting credit to SMEs for the main hierarchical layers of acquired banks (Beretta and del Prete, 2012). However, the degree of delegation may depend on ICT technologies used by the bank (Mocetti et al., 2017). Flögel (2018) shows that, unexpectedly, the functional distance can be shorter in large banks than in regional banks due to the considerable credit-granting authority of local staff. Nevertheless, the regional bank is able to consider soft information when it most strongly influences lending decisions, i.e., when deciding whether to lend to financially distressed SMEs (Flögel, 2018). Zhao & Jones-Evans (2017) show that functional distance between branches and banks' headquarters has exacerbated credit constraints during the last financial crisis, which has presumably caused a "flight to headquarters" (Degryse et al., 2018).

3.1.4.3. The private equity market and the stock market are concentrated in metropolitan areas.

The role of distance is also observed in the VC industry and in stock market finance. Fritsch & Schilder (2012) confirm the role of the spatial proximity between a VC company and the firm, in the probability to obtain financing, and suggest that the problems caused by the geographic distance could be overcome by the syndication of investments with one of the VC firms located close to the investment. Avdeitchikova (2009) and Grilli (2019) report also that informal venture capital investors are highly concentrated in metropolitan areas, suggesting that BAs do not alleviate the regional inequalities in capital distribution. Amini et al. (2012) indicate that **London dominates IPO activity on the AIM** but considers that this observation reflects the dynamism of this local economy rather than differential funding across the regions.

3.1.5. Bank competition

The level of bank competition in a given area could impact their propensity to lend to SMEs, even though this impact may be nonlinear with differences between small and medium firms (Mudd, 2013). Mercieca et al (2009) observe that banking competition increases the number of banking relationships maintained by SMEs. **Two hypotheses coexist in this literature: the information hypothesis states that a bank's market power should increase credit availability, while the market power hypothesis suggests that competition between banks could reduce credit rationing** (Carbo-Valverde et al., 2009).

3.1.5.1. The competition hypothesis

The competition hypothesis is confirmed in Italy by Agostino & Trivieri (2008; 2010) and on a larger European sample by Ryan et al. (2014). Deloof et al. (2019) nuances these findings by showing that the positive effect of banking competition on leverage does not appear with foreign banks. Agostino et al. (2010, 2012) report that bank competition increases the impact of risk on credit allocation and provide two plausible interpretations of this finding: one resorting to more accurate screening by more competitive banks; the other alleging lower market power of incumbent banks, which may restrict their willingness to finance riskier firms. Mol-Gómez-Vásquez et al. (2019) report a non-linear relation between bank concentration and the intensity of borrowers' discouragement, suggesting that bank concentration could have negative effects on an already concentrated market.

3.1.5.2. The market power hypothesis

Mol-Gómez-Vásquez (2019) and Canton et al. (2013), report that SMEs from countries with concentrated banking sectors are more positive about loan accessibility. Vigneron & Benkraiem (2015) also show that SMEs engaged with a centralized bank take significantly more risks compared with local or mutual banks. Degryse et al. (2010) report in the French context that banks concentration could be detrimental to SMEs with single relationship lending, since this could increase their probability to be "dropped". However, in the German context, Schmieder et al. (2010) and Inklaar et al. (2015) do not observe a negative impact of the banking sector consolidation on the financing terms of SMEs or on SMEs growth.

3.2. Access to finance and the firm's characteristics

Age, size, activity, location, the level of intangible activity, ownership structure and the provision of collateral are important determinants of the capital structure in SMEs (Mac an Bhaird et al., 2016) Different theories have been mobilized to explain how some characteristics of the company may influence its access to finance. The signaling theory proposes that the quality of the founding teams, or the use of ICT, might be considered by financiers as a signal of the quality of the project. Alternatively, the resource-based view proposes that the same characteristics, as well as the entrepreneur's gender, network, or the team's experience, could facilitate access to finance.

3.2.1. Age and size

Younger and smaller firms experience larger credit restrictions (Andrieu et al., 2018; Becchetti et al., 2010; North et al., 2010; Sánchez-Vidal & Martin-Udego, 2012; Demirel & Parris, 2015; Mac an Bhaird et al., 2016; Drakos & Giannakopoulos, 2018; Mergemeier et al., 2018; Mol-Gómez-Vázquez et al. (2018); Driver & Munoz-Bugarin, 2019;). The age of the SME could be a significant restriction factor, with nascent SMEs experiencing higher financing restrictions (North et al., 2010, 2013; Canton et al., 2013, Owen et al., 2019), even with VC (Bilau, 2012). **Two alternative sets of theories link the age of the company and its access to finance. The life cycle theory** (Berger & Udell, 2006) supposes a strong link between the age of the company and available information and stipulates that the SME, during his life, first calls on insiders funding before setting up venture capital, trade credit or bank loans and ultimately issuing securitized or being publicly listed. SMEs are reputed informationally opaque, and firm opaqueness increases monotonically as firms get smaller (McCann & McIndoe-Calder, 2015). The **hold-up theory**, proposed by Sharpe (1990), Rajan (1992), von Thadden (2004) and Kim et al. (2012), supposes that banks offer low borrowing rates to nascent firms in order to gain an information monopoly over them. In a second stage, the bank then extracts rents from the firms in the form of higher borrowing rates. The life cycle theory is partially validated by Andrieu et al. (2018) who show that firm age and size are positively linked to SMEs' access to bank loans (also confirmed by Laib, 2013), but only firm size is positively related to the provision of trade credit. Hyytinen & Pajarinen (2008) also show that firm size is not as closely related to informational opacity as firm age. Ylhäinen (2017) obtains results that are consistent with the hold-up theory.

3.2.2. Legal form

Legal form has been found to be a determinant of access to finance (Abbasian et al., 2014, Yazdanfar & Abbasian, 2014). **However, the better access to capital of formal firms is conditional on the regulatory environment.** Distinguin et al. (2016) show that informal firms in a particular sector can hurt the formal firms' access to capital.

3.2.3. Financial disclosure

Financial disclosure, accounting and auditing norms have also been found to have a significant impact on credit (Vander Bauwhede et al., 2015; Garcia-Teruel et al., 2014; Moro et al., 2015; Brancati, 2015; Breuer et al., 2018; Van Caneghem & Van Campenhout, 2012)**, typically through a shifting of banks from relational approaches to transaction approaches** (Breuer et al., 2018), **and trust** (Palazuelos et al., 2018). Loan officers tend to be willing to facilitate access to credit for SMEs with qualitative accounting information, if this information is audited. Niemi & Sundgren (2012) find however no association between modified audit opinions and credit rationing, contrary to much of the earlier research finding that notified audit opinions provide incremental information for lenders. Pellegrina et al. (2017) also show that banks tend to grant increasing volumes of credit to enterprises that use ICT more extensively.

Banks use both transactional and relationship lending technologies (Beck et al., 2011). **Relationship technologies allow banks to capture soft information that cannot be captured by transactional technologies** (Bartoli et al., 2013a), especially when information asymmetry is severe, for example for innovation financing (Brancati, 2015). Relationship technologies can alleviate credit constraints during financial downturns (Beck et al., 2018). However, **while a principal credit relation can alleviate information asymmetries (**Castelli et al., 2012; Cenni et al., 2015; Hernández-Cánovas & Martínez-Solano, 2010)**, it can also induce the bank to extract rent from the firm** (Duqi et al., 2018). Angori et al (2019) report that **multiple banking relationships can alleviate credit constraints for small firms**.

The length of the credit relationship has ambiguous effects. It reduces information asymmetries (Angori et al., 2019, Fredriksson & Moro, 2014, Neuberger & Räthke-Döppner, 2015), and can allow the bank to reduce its monitoring effort (Sampagnoro et al., 2015, Zhang et al., 2018). Longer credit relationships and amplify the positive effects of collateral

(Agostino & Trivieri, 2017). Hernandez-Canovas & Martinez-Solano (2010) and Kysucky & Norden (2016) report higher access to loans for SMEs with a longer banking relationship. Lopez-Espinosa et al. (2017) report that relationship lending starts to pay after a time span of two years.

However, long bank-borrower relationships can also induce moral hazard. Agostino et al. (2012) report that the influence of credit market concentration on firm default probability is greater as the duration of (close) credit relationships lengthens. Agostino et al. (2018) find that the positive impact of longer lending relationships on efficiency decreases as indebtedness increases, suggesting that moral hazard problems may endanger firms' technical efficiency.

3.2.3. Industry

SMEs in the manufacturing sector encounter disproportionate difficulty to access credit (Andrieu et al., 2018), which their managers attribute to the lack of collateral (North et al., 2010).

North et al. (2013) also find that **young technology-based small firms experienced stricter credit conditions in the last period**, particularly for early-stage funding. Innovative firms (Lee et al., 2015) and technology-based small firms (North et al., 2013) were the more restricted during the last financial crisis.

The level of competition in the industry has also been found to impact access to finance and SMEs' survival. Firms seem to have a smaller chance of surviving in less concentrated industries (Madrid-Guijarro et al., 2011; Zajc Kejžar & Ponikvar, 2014) However, market competition might facilitate access to bank finance by increasing the potential liquidity of the productive assets that may be used as collateral (Cerasi et al., (2017).

Other factors have been found to influence survival, such as the firm's technology (Madrid-Guijarro et al., 2011), or the maturity and turnover of the industry (Zajc Kejžar & Ponikvar, 2014).

3.2.4. Firm's Risk

SMEs risk is more difficult to assess than for large companies, due to their opacity and limited reporting. Risk and asymmetric information have a significant impact on bank finance (Kirschenmann & Norden, 2012; Bruns & Fletcher, 2008).

Different variables may influence SMEs risk level. Profit is the most significant factor that determines failure risk according to Williams (2016) and Konstantaras & Siriopoulos (2011). For other authors, the capital structure and interest expenses are more relevant than economic variables (Modina & Pietrovito, 2014; Mselmi et al., 2017). Gabbianelli (2018) identifies the relationship between firms and their territory as a significant variable for default prediction. These results must be put into perspective in terms of the size of the company (Gupta et al., 2015) and the current economic cycle (Manzaneque et al., 2015).

CEO duality, owner concentration, and a reduced number of outside directors on the board are significantly and negatively correlated with small company default (Ciampi, 2015); **Measures of account activity** also substantially improve default predictions (Norden & Weber, 2010). Niskanen & Niskanen (2010) suggest that an increase in managerial ownership decreases loan availability. The results on loan interest rates suggest that though an increase in managerial ownership initially increases interest rates, the effect is reversed at higher levels of ownership.

Altman et al. (2010), Cornée (2019) and Angilella & Mazzù (2015) Giannozzi et al. (2013) show **the importance of including non-financial information as a predictor of company worthiness** for increasing the prediction power of risk models built specifically for SMEs. **The need for soft information forces banks that lend to these borrowers to invest more in relationship banking technologies** to retain competitiveness (McCann & McIndoe-Calder, 2015).

Deakins et al. (2010) reveal that banks have standard financial ‘models’ that are followed in terms of financial requirements, although there may be considerable discretion exercised by individual bank loan officers, dependent on seniority. Moro & Fink (2013) highlight that SMEs that enjoy a high level of loan managers’ trust in the managers of SMEs obtain more credit and are less credit constrained. Hirsch et al. (2018) show that interorganizational trust reduces agency costs in relationships between German savings banks and SMEs by lowering the bank's monitoring intensity. Surprisingly, institutionalized trust increases the banks’ monitoring intensity. As regards equity, Dowling et al. (2019) shows that national interpersonal and institutional trust positively influences SME attitudes towards equity financing.

3.2.5. Collateral and guarantees

Collateral operates as a positive factor in obtaining credit (Colombatto et al., 2012) and contributes to reducing loan loss in the event of default (Blazy & Weill, 2013).

Collateral may have a signaling effect: Comeig et al. (2014) show that firms with low success probability tend to finance their projects without collateral and with high interest rates, whereas high success probability borrowers accept loans with real estate collateral and low interest rates. However, Duarte et al. (2018) find a positive relation between collateral and default, while the relation between guarantees and default is negative.

Collateral may be complementary to relationship banking: Agostino & Trivieri (2017) report that relationship banking increases the impact of collateral in helping SMEs to access bank finance. Becchetti & Garcia (2011) suggest that collateralized borrowers are riskier ex ante, but not ex post if the bank's policy is that of lending to small borrowers which belong to larger networks and consortia with which the bank has a long history of relationship.

Since the collateral is often housing equity, Reuschke & Maclennan (2014) report a causal linkage between housing assets and SMEs investments.

Bartoli et al. (2013b) and Cardone-Riportella et al. (2013) find that small firms supported by MGIs less likely experienced financial tensions even at that time of utmost financial stress: MGIs played a signaling role beyond the simple provision of collateral (see also Columba et al. 2010). MGIs can be seen as a wealth-pooling mechanism that allows otherwise inefficiently rationed borrowers to obtain credit (Busetta & Zazzaro, 2012).

3.2.6. Other factors

Other factors have been found to impact access to finance for SMEs. Mac an Bhaird et al. (2016) have shown that **SMEs with declining turnover were more frequently discouraged borrowers.**

While growth is a motive for requesting external capital, it also can be a factor of restriction (Lee, 2014). Rostamkalaei & Freel (2016) show that growth firms pay a higher cost of debt. Brown & Lee (2019), however, find that high growth SMEs are no more financially constrained than less rapidly growing SMEs. Rostamkalaei & Freel (2016) show, on a UK sample, that **a higher growth is associated with a higher cost of credit**. This higher cost of capital might compensate for the high moral hazard perceived by financiers, especially for **new ventures** (Hyytinen & Takalo, 2008, Howorth & Moro, 2012).

Belonging to a group could offer better access to external capital, and Wincent et al. (2010) show that smaller groups are more efficient in securing capital, due to better governance and organization.

Liu (2013) finds that the **ICFS reduces after the IPO**, but remains positive for the firms with greater investment opportunities.

3.3. Access to finance and entrepreneur's characteristics

Bernstein et al. (2017) reports that the characteristics of the founding team are key determinants for start-up funding. Entrepreneurs' characteristics and goals may also influence the demand side (Rao & Kumar, 2018).

3.3.1 Gender

Several empirical studies suggest that the fact that genders are not equally represented in the population of entrepreneurs could be attributed to difficulties to access financing in the start-up stage, both from formal and informal sources (Abbasian et al., 2014; Jayawarna et al., 2012); Roper & Scott, 2009, Neuberger & Räthke-Döppner, 2013)). Alonso-Almeida (2013) shows that **companies run by women start with less capital and receive less external financing than firms run by men**. The consequence of undercapitalization during the start-up phase is underperformance during the life of the business. Boyer & Blazy (2014) find a positive effect of being a man when creating a business, men having, at any time, a survival probability that is 9.55 % higher than that of women.

Female entrepreneurs seem to face tighter credit availability (Bellucci et al., 2010; Stefani & Vacca, 2015), **but the empirical results are inconsistent on whether they do pay higher interest rates.** Mascia & Rossi (2017) show that female-led enterprises are more likely to face worse price conditions for bank financing compared to their male-led counterparts, and that firms whose leadership changes from female to male are more likely to benefit from an improvement in interest rate levels, while Bellucci et al. (2010) and Slavec & Prodan (2012) do not report higher interest rate or lower debt financing for women-led SMEs.

Some papers suggest that the difficulties of women entrepreneurs could be demand-side (Roper & Scott, 2009; Stefani and Vacca, 2015). Moro et al. (2017) find no evidence that

financial institutions are biased against female managers, but find that female-run firms are less likely to file a loan application, as they anticipate being rejected.

3.3.2. Ethnicity

Abbasian et al. (2014) report a **significant influence of ethnicity on the access to external capital** of Swedish SMEs at the start-up stage, and Yazdanfar & Abbasian (2014) suggest that immigrant-owned Swedish firms tend to use less bank debt than their native counterparts. By contrast, Fraser (2009), finds no ethnic discrimination in credit markets in Great Britain and suggests that ethnicity may be affected by misperceptions of ethnic discrimination, and Cheng (2015) finds that after controlling for a wide variety of borrower, establishment, and regional characteristics, **business closure rates for minority entrepreneurs are not higher than those for white business owners.**

3.3.3. Age, experience and education

In start-up finance, the team's business experience can signal the quality of the unobservable venture's technology (Hoenig & Henkel, 2015). Coad et al. (2014) show that prior business experience is significantly related with start-up size, as are a number of other variables such as age, education and bank account activity. Abbasian et al. (2014) also show that entrepreneurs' age, experience of starting businesses and education, as well as additional jobs beside their own business, influence the way in which entrepreneurs finance their business, increasing the use of bank debt (Abbasian et al., 2014; Coad et al., 2014; Yazdanfar & Abbasian, 2014). According to Cumming & Johan (2008), more experienced entrepreneurs are more likely to get financed with common equity and less likely to be financed with convertible preferred equity, while more experienced investors are more likely to use convertible preferred equity and less likely to use common equity.

The role of experience in access to finance may vary depending on the financing source. Nofsinger & Wang (2011) show that institutional investors rely on the experience of entrepreneurs in managing start-ups and the quality of investor protection to reduce moral hazard at the early-stages of financing. In comparison, informal investors are likely to have a social relationship with the entrepreneur, and thus have information about that person's skill and character, which renders entrepreneurial experience less important.

Cowling et al. (2018) report that previous entrepreneurial experiences had little effect on SME performance during the last financial crisis, suggesting that previous experience has

little value in that uncertain environment. Moreover, Freel et al. (2012) show that serial entrepreneurs are more likely to become discouraged borrowers, due to the mixed nature of their entrepreneurial experience.

The founder's or funding team's education might be valued by financiers as human capital (Saridakis et al., 2008; Slavec & Prodan, 2012; Bernstein et al., 2017). Hornuf et al. (2018) report a significant impact on the number of senior managers on the success of post-crowdfunding financing campaigns. Ratzinger et al. (2018) evaluate the impact of start-up founding teams' higher education on the probability of securing equity investment and subsequent exit for investors. They show that teams with a founder that has a technical education are more likely to secure equity investment and to exit. Vogel et al. (2014) report a significant impact of diversity within the founding team, in terms of age, nationality, education, and experience, in the propensity to obtain funding. Entrepreneurial social ties can also facilitate access to finance (Slavec & Prodan, 2012). However, Inci & Parker (2013) report that investing in a network in the aim of a better access to finance may be counterproductive for the entrepreneur.
Duffner et al. (2009) highlight that a higher level of trust in the relationship between VC and entrepreneur is associated with a higher success rate.

3.3.4. Attitude and Investment Readiness

Fellnhofer (2015) provides a literature review on investment readiness. Mason & Kwok (2010) suggest that **access to finance is constrained by demand-side weaknesse**s, highlighting the need for investment readiness programmes. Mol-Gómez et al. (2018) show that firms whose managers show an attitude towards growth and business improvement are less likely to be discouraged from applying for a loan. Hamelin (2013) suggests that small family businesses have a propensity to deliberately limit their growth (i.e., they adopt conservative growth behavior), and Lappalainen & Niskanen (2013) have more negative attitudes towards bank loans and trade credit. Peruzzi (2017) shows that family management and family ownership concentration increases the ICFS of Italian SMEs. Lappalainen & Niskanen (2013) show that small family firms have more negative attitude towards bank finance and trade credit than non-family firms, but more positive attitude towards equity increase by current shareholders.

Brinckman et al. (2011) report a **link between financial management competencies and firm's growth**. Foley (2018) and Irwin et al (2014) advocates for more financial skills and advice in start-up owners-managers, especially in the creation phase. Several authors suggest a link between financial advice and access to finance (Strausz, 2009; Scott & Irwin, 2009; Rostamkalaei & Freel, 2017). Scott & Irwin (2009) also report that women entrepreneurs seek more professional advice than male entrepreneurs, who tend to address family and friends.

3.4. Access to finance and the project's characteristics

The theoretical hypothesis that financing decisions should be independent from investment decisions (Modigliani and Miller, 1956), might not be relevant for SMEs due to financing restrictions, and the nature of the project or the economic activity of the firm is likely to affect financial constraints. **The level of risk of the project, in particular, is a determinant of access to credit** (Becchetti et al., 2010, Mac an Bhaird et al., 2016). Ferrando & Preuss (2018) also show that SMEs tend to finance intangible investments by internal resources, and restrict credit application to tangible investments.

3.4.1. Innovation and R&D

New technology-based firms (NTBFs) are likely to be the most constrained firms due to lack of track record, lack of assets and high information asymmetry (Bertoni et al., 2010)**.** Nunes et al. (2013), Bönte & Nielen (2011) and Czarnitzki & Hottenrott (2011) also show that **R&D intensive firms are likely to be financially constrained**.

Risky projects such as **product innovation or market diversification** also face more restrictions (Lee et al., 2015; Muscettola, 2015; Andrieu et al., 2018). Bönte & Nielen (2011) confirm that SMEs with product innovations have a higher probability of using trade credit than other SMEs. However, Magri (2009) shows that small innovators show a lower ICSF than small non-innovative firms.

Scott & Scott (2016) demonstrate that **an entrepreneur with a more complex idea will have greater difficulty obtaining outside finance.** Scott et al. (2017) show that the probability of small business firms obtaining outside financing to support their R&D projects is greater given more complex commercial opportunities – defined as a greater number of different potential applications for a project's anticipated results – for their innovations.

Meuleman & Maeseneire (2012) find that **obtaining an R&D subsidy provides a positive signal about SME quality** and results in better access to long-term debt. **Patents may also signal an entrepreneur's ability and reduce ambiguity** (Hottenrot et al. 2016; Hahn et al., 2017; Munari & Toschi, 2015). Bessler & Bittelmeyer (2008) suggest that patents are a reliable indicator for the success and the performance of start-up technology firms that went public and that the valuation effects are more pronounced for higher quality patents in Germany. Hoenig & Henkel (2015) find that while patents affect the VC's decision making in their property rights function, they do not seem to serve as technology quality signals, and that **VC rely more on research alliances and, partly, on team experience as signals of technological quality**.

Pederzoli et al. (2013) show that, although the value of the patent portfolio always reduces the probabilities of default, its dimension reduces the firm's riskiness only if coupled with an appropriate equity level. Heger & Hussinger (2017) find that pending patent applications attract risk-seeking investors, while more cautious investors do not react upon pending patent applications.

3.4.2. Export and foreign direct investment (FDI)

De Maeseneire & Claeys (2012) show that **SMEs that seek to internationalize are financially constrained for their foreign direct investment (FDI) projects, due to the lack of collateral and information problems**. Maes et al. (2019) show that exporters have to finance relatively more working capital than their non-exporting peers and that they resolve this financing need by carrying more short-term financial debt.

4. Summary and suggestions for future research

The objective of our work was to investigate academic progress on the topic of SME constraint financing.

An analysis of our 428 papers sample shows that the literature has focused on the following questions:

(1) Is there a financing gap for SMEs in developed economies?

(2) What are the determinants of access to finance for SMEs?

(3) Are SMEs financially constrained?

Previous sections raise the still open question of whether SMEs in developed economies face a financial constraint. While the measure of these financial constraints is not straightforward and the financial constraints seem to vary by region and by other factors, the literature suggests that at least for some European countries, the last financial crisis has caused a financing gap for SMEs. Moreover, the public measures that have been proposed have not all proved their efficiency.

Concerning the determinants of access to finance for SMEs, literature highlights that small firms and especially start-up financing is hindered by SMEs' opacity and information asymmetry. Therefore, the factors that alleviate information asymmetry and moral hazard would likely facilitate access to finance. Those factors are numerous and related to the firms' environment (such as regulation and financial inclusion) its characteristics (age, size, activity, and risk, as well as its capacity to provide collateral), the entrepreneur's characteristics (namely, his/her experience and attitude, while gender and ethnicity do not seem to have a significant impact on credit constraint) and the project's characteristics. Innovations, FDI and exports are more difficult to finance than other projects, while sustainable investment projects may access specific opportunities.

This paper reports some consensual findings in the literature, as well as some remaining disagreements. Future research might focus on the means to render the sources of finance that are alternatives to bank debt more accessible to SMEs. The most efficient public support initiative could also be further investigated.

[work in progress]

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